

TRINIDAD AND TOBAGO



# ADMINISTRATION REPORT

OF THE

WITH THE COMPLIMENTS  
OF THE CHIEF TECHNICAL OFFICER  
DEPARTMENT OF AGRICULTURE  
TRINIDAD AND TOBAGO

# AGRICULTURE DEPARTMENT

FOR THE YEAR 1957

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**OF THE**

**AGRICULTURE DEPARTMENT**

**FOR THE YEAR 1957**



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**Department of Agriculture, Trinidad and Tobago**  
**scientific and technical staff**

(As at 31st December, 1957)

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...13

In addition there are

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8 SCIENTIFIC ASSISTANTS

## INTRODUCTION

The annual rainfall was lower than the average for the past 25 years.

Preliminary figures indicate that the value of all agricultural exports was \$50,423,301. Exports for 1956 were valued at \$45,589,215.

The quantity of sugar produced was 167,805 tons, compared with 160,230 tons in 1956 and 192,793 tons in 1955. This output was lower than anticipated due mainly to the reduced quantity of cane supplied by cane farmers. Sugar exports totalled 141,963 tons, an increase of 4,590 tons over the amount exported in 1956.

Cacao exports amounted to 142,372 cwt. valued \$8,474,572, compared with 194,971 cwt. valued \$10,485,241 in 1956.

The total value of all citrus products exported was \$3,330,618 as compared with \$2,647,058 in 1956. The lime industry continues to decline.

The spread of Red Ring Disease in coconuts continues. A special Research Scheme is planned for 1958.

Compared with 1956, exports of bananas under the 15-year contract with the Union International Company have increased by 81,216 bunches. Twenty-five shipments totalling 295,557 bunches were made. The increase would have been greater had it not been for the dry weather and a decision of the Company not to export six-hand bunches after the end of 1958. Free demonstrations of banana spraying have been given, and a subsidised spraying service for farmers has been planned for 1958.

Agronomic and other investigations at the Central Experiment Station have continued. A significant development has been the discovery, which is now being fully tested, that hybrid cocoa seeds can be used instead of clonal material. This will place at the disposal of the industry a cheaper source of planting material. A new and cheaper method of grafting mangoes—the T-graft method—has also been developed.

The Extension Division continues to perform the numerous services outlined in this report. Development of the unit cocoa farm established on the El Reposo Demonstration Station towards the end of 1956 continues. Satisfactory progress of a Land Use Subsidy Scheme started in 1954 has increased the interest of the farming community of Tobago in soil conservation.

Development work on Land Settlements, which started in 1953 with funds provided by a Colonial Development and Welfare Scheme, continued on six locations. The Scheme, which was planned to end in 1958, has been extended to March, 1959.

Investigations on the possibilities of rice expansion in Trinidad by a firm of Consulting Engineers was completed last year. The final report has been received and is being considered.

Animal Health continued to be satisfactory. The incidence of Paralytic Rabies, Newcastle Disease and Tuberculosis was low. For the fifth consecutive year the Colony remained free from Swine Fever.

The Artificial Insemination Service, for cattle, which started in 1954 and already covered the Northern, Eastern and Central Zones of Trinidad, was extended to the area around San Fernando and initiated in Tobago.

There have also been routine sales from Stock Farms and District Stations of young breeding stock, which include young bulls, pigs, goats, sheep, poultry, chicks and eggs. Grade heifers continue to be sold to selected farmers under special agreement.

The Department of Agriculture continues to emphasise that good quality grass is the best and cheapest food for milk production. There has been increasing interest in the use of Pangola Grass for the planting of pastures.

Government's guarantee to purchase certain food crops in unlimited quantities was extended for another year and the price schedule of these crops has been revised in certain instances.

## **AGRICULTURAL POLICY**

1. Agricultural policy has been the subject of review during the year in preparation for the new Five-Year Development Programme. This is to start in 1958 and details will be provided in the Annual Report for that year.

## **AGRICULTURE IN THE COLONY**

### **General Conditions**

2. The annual rainfall from a number of selected stations throughout the Colony and the monthly mean for 1957 as well as for a 26-year average, are given in Tables I and II. These data have been kindly supplied by the Hydrologist of the Works and Hydraulics Department. Rainfall was lower than the average for the past 25 years.

### **Agricultural Products for Home Consumption**

#### **CROPS**

3. Ground provision crops suffered from the long spell of dry weather, so that supplies were scarce and prices, especially during the last quarter of the year, tended to be high. Supplies of green vegetables were good, though the lack of sufficient irrigation water retarded production in the dry season. Weather conditions favoured the growth of maize, with the result that towards the end of the year a large crop was offered for sale.



## LIVESTOCK

4. The general condition of livestock was satisfactory. Fodder supplies were adequate and many farmers are now showing interest in Pangola Grass.

5. *Supply of Stock Feeds*—As mentioned in paragraph 3, supplies of maize were good towards the end of the year. Broken rice and rice bran continued to be in short supply and had to be imported from British Guiana. Supplies of cotton seed meal and molasses were adequate. Supplies of coconut meal were abundant.

6. *Supply of Animal Products*—Returns from the Municipal abattoirs (excluding figures from the Port-of-Spain abattoir for the last quarter, which are not available) show that 1,297.0 tons of beef, 757.4 tons of pork and 54.6 tons of mutton were produced from animals slaughtered. Returns from twelve principal distributors show that they handled 300,000 gallons of milk. Supplies of meat, milk, fish and animal products, generally, were inadequate for self sufficiency and these commodities had to be supplemented by importation as will be seen by the preliminary figures given in Table IV.

## Agricultural Exports in 1957

7. Preliminary figures indicate that the value of agricultural exports, raw and manufactured, amounted to \$50,423,301 compared with \$45,589,215 in 1956.

8. The quantity and value of the various agricultural exports are shown in Tables V and VI, the data for which were kindly supplied by the Director of Statistical Service. The figures quoted are preliminary ones and are subject to final review.

## SUGAR

9. The quantity of sugar produced was 167,805 tons, compared with 160,230 tons in 1956 and 192,793 tons in 1955. The increase in output over the previous year, was, nevertheless, lower than anticipated at the beginning of the year. This was mainly due to the reduced quantity of canes supplied by cane farmers, late reaping of the 1956 crop following a strike of sugar workers, and to an attack of froghopper.

10. Deliveries by cane farmers in 1957 amounted to 452,246 tons compared with 568,790 tons in 1956—a drop of 116,544 tons. This figure represented only 29 per cent. of the total tonnage of canes ground compared with from 33 per cent. to 35 per cent. in recent years.

11. The final crop figures, compared with the previous year, are given in Table VII.

12. The quantity of sugar retained for local consumption was fixed at 26,000 tons, which included sugar used in manufacturing industries. Exports of sugar during 1957, totalled 141,963 tons (137,373 tons in 1956) of which 16,262 tons were shipped

to Canada, 100 tons to neighbouring B.W.I. Territories and the remainder to the United Kingdom. Shipments in bulk amounted to 113,736 tons (of which 14,262 tons went to Canada) compared with 106,580 tons in 1956.

13. The price of Negotiated Price Quota sugar of the 1958 crop has been increased by £1. 13s. 4d. (\$8.00 B.W.I.) to £43. 16s. 8d. (\$210.40 B.W.I.) per ton. This relates only to that part of the export production which is covered by guaranteed prices negotiated annually under the Commonwealth Sugar Agreement.

14. Relations with the All Trinidad Sugar Estates and Factories Workers' Trade Union were resumed in February, 1957, and an agreement covering wages and working conditions was entered into in April with effect from the first day of reaping of the 1957 crop. Wages were increased by 2 cents per hour to hourly and daily-paid employees; by 8 cents per task to task rate workers on the Northern Estates with a corresponding increase in piece work rates for the Southern Estates; by \$1.30 per week to weekly-paid employees and by \$2.60 per fortnight to fortnightly-paid employees. In addition, a scheme of sick allowances was introduced.

#### CACAO

15. Cacao exports amounted to 142,372 cwt. valued at \$8,474,572 compared with 194,971 cwt. valued \$10,485,241 in 1956. The export value of raw cacao from 1952-1957 is given in Table VIII.

16. Good progress can once more be recorded for the rehabilitation of the industry by means of the Cocoa Subsidy Scheme, details of which can be found in the Annual Report of the Cocoa Board.

#### CITRUS

17. The total value of all citrus products exported was \$3,330,618 compared with \$2,647,058 in 1956.

18. The output of fresh fruit and canned products by the Co-operative Citrus Growers' Association is shown in Table III.

19. With the exception of the lime crop which was, as usual poor, yields of citrus were satisfactory, although the quality of fruit was somewhat below average.

20. Dry weather conditions during the first half of the year favoured fruit setting. The 1957-1958 crop is expected to be large.

21. The Co-operative Citrus Growers' Association purchased a total of 619.9 tons of fertilizers at a cost of \$72,393.93 during 1957. Sales totalled 628.7 tons costing \$74,064.96.

#### COCONUTS

22. The total value of all exports of coconuts and their derivatives amounted to \$1,387,011 compared with \$1,340,161 in 1956.

23. The services of a Nematologist and supporting staff are to be obtained and a special Research Scheme is planned to start in 1958.

#### BANANAS

24. Twenty-five shipments of bananas totalling 295,557 bunches were made to the United Kingdom under the 15-year contract with the Union International Company compared with 214,341 bunches exported in 1956. Of the quantity shipped during 1957, about 30,000 bunches were supplied by one large estate. This increase would have been much greater but for the dry weather and a decision of the Company not to accept six-hand bunches after the end of 1956. Bananas were shipped at  $\frac{3}{4}$  full grade and were mainly of the Cavendish variety.

25. The bad handling of bananas after harvesting is causing appreciable loss and in order that the industry may expand satisfactorily, it will be necessary to correct all defects at their sources.

26. Free demonstrations of banana spraying have been given. It is intended to provide a subsidised spraying service for growers in 1958.

#### COFFEE

27. Coffee prices during the year ranged from 46 cents to 50 cents per lb. for Robusta and 60.6 cents to 72 cents per lb. for Arabica. Exports of raw coffee amounted at 35,701 cwt. valued \$2,151,036, compared with 29,436 cwt. valued \$1,571,566 in 1956.

#### TONCA BEANS

28. The price obtained by producers ranged from \$1.07 to \$1.12 per lb. The amount exported was 29,352 lb. valued \$67,178, compared with 184,286 lb. valued \$324,838 in 1956.

#### RUBBER

29. Exports of raw rubber totalled 145,600 lb. valued \$68,979, compared with 129,568 lb. valued \$71,202 in 1956.

### WORK OF THE DEPARTMENT OF AGRICULTURE

30. This section of the report summarises the activities and achievements of the Department of Agriculture. Fuller details in unpublished reports of individual officers are available, and enquiries regarding any particular aspect of the work will be welcome.

#### Extension

##### GENERAL

31. The following services were undertaken by the Department's Extension Division during the year:—

(a) general advice to the public on agriculture;



- (b) inspection visits to school gardens for advice and judging in connection with the annual field competitions;
- (c) supervision of over 10,000 acres of Food Gardens;
- (d) inspection and allocation of Crown Land and the preparation of detailed programmes of work for applicants under 3-year probationary agreements leading to a 25-year lease;
- (e) assistance and support to agricultural organisations, agricultural exhibitions, field and livestock competitions, field days for farmers;
- (f) supervision of 18 Land Settlements;
- (g) supervision of 20 Breeding Units;
- (h) supervision and management of District Demonstration Stations;
- (i) parasol ants destruction on Crown Lands;
- (j) crop surveys and the collection of district information;
- (k) assistance to the Rice Division in the distribution of pure line seed paddy to farmers;
- (l) inspections and recommendations concerning the sale of Government-bred Stock to farmers;
- (m) implementing the internal legislation for plant protection.

32. District Demonstration Stations are maintained at Sangre Grande, Rio Claro and Penal in Trinidad and at Louis d'Or in Tobago. The objects of these stations are:—

- (a) to ascertain suitable systems of mixed farming for application to peasant agriculture;
- (b) to demonstrate methods of crop production and livestock management which the peasant could copy;
- (c) to be centres for the distribution of seed, planting material and stock;
- (d) to be local headquarters of the Department of Agriculture.

33. Other features of the work on district stations and breeding units included the maintenance of permanent crops, livestock and farm buildings; keeping accurate costings; rehabilitating cocoa fields; constructing additional drying trays and sweat boxes and establishing nurseries of Pangola Grass, banana and coconut.

34. Successful Field Competitions were held in all counties. The Honourable Minister of Agriculture, Lands and Fisheries donated a cup for the best vegetable holding in the St. George County. The first award was made during the year.

35. The Tobago District Agricultural Society, with the assistance of the Extension Division, held its Tenth Annual Agricultural Exhibition at King's Camp, Scarborough.

36. The unit cacao farm established at the El Reposo Demonstration Station towards the end of 1956 made satisfactory progress. Plans are being made for establishing two other types of unit farms at El Reposo during 1958, viz., poultry and beef cattle.

37. The banana industry continues to receive special attention. Several field days to demonstrate good cultural and marketing practices were held on district stations and in villages. Selected plots on farmers' holdings continued to receive free supplies of banana fertiliser. Spraying demonstrations were also given on some of these plots (*vide* para. 26).

38. In Tobago, a Land Use Subsidy Scheme started in 1954, continued. The increased interest in soil conservation among the farming community of Tobago is largely due to the satisfactory progress being made by this scheme.

39. A survey on market gardens, similar to that undertaken during 1956, was performed. The information obtained so far is being analysed by the Statistical Department.

40. A survey to determine the acreage planted to paddy in Trinidad was undertaken.

41. Field officers destroyed around 3,162 parasol ant nests involving an area of approximately 342,589 square feet.

42. About 450 visits were paid to 248 farms in connection with applications for Certificates of Fitness to own firearms to protect crops and livestock. One hundred and twelve (112) applications were recommended.

#### LAND SETTLEMENT

43. At the beginning of 1956, seventeen Land Settlements, formerly maintained by the Land Settlement Division, were handed over to the Extension Division for purposes of co-ordination. During 1957, one more settlement—St. Helena, was added.

44. The development work which started in 1953 with funds provided under a Colonial Development and Welfare Scheme continued on the following locations:—

Rio Claro  
El Recuerdo (Manzanilla)  
Gordon Millar Farm  
Maracas  
Bamboo Grove  
Louis d'Or (Tobago)

45. A further extension of these schemes to 31st March, 1959, was approved by the Secretary of State for the Colonies. The work consists mainly of road construction, drainage improvement, the installation of water supplies, preparation of recreation grounds and the establishment of housing sites.

46. The demarcation of holdings by surveyors of the Lands and Surveys Department, continued.

47. Some preliminary surveys were also done on the Maracas Land Settlement with the view of starting the allocation of land in the near future.

48. All roads and traces provided for in the programme of development at Rio Claro, El Recuerdo, Louis d'Or (Tobago), and Bamboo Grove, were completed.

49. Adequate water supplies were installed in the Rio Claro Land Settlements I and II. Extension of the water supply to El Recuerdo Land Settlement is contemplated for next year. Provision of a satisfactory water supply for Gordon Millar and Louis d'Or (Tobago) remains to be done.

50. Work in connection with the Central Farms at Rio Claro, El Recuerdo and Gordon Millar, continued. Three mules were purchased for the Central Farms. Work on the establishment of a Central Farm at Maracas has started.

51. Table IX shows the position with regard to tenants on Land Settlements administered by the Extension Division, and Table X shows the position with regard to those Land Settlements still being developed.

#### CROWN LANDS

52. Table XI shows the position with regard to tenants on Crown Lands. During the year, 312 acres were allocated and settled, while 94 acres and an additional 488 acres were recommended for leases and probationary agreements respectively.

53. Revenue derived from this division amounted to \$51,922.86, compared with \$54,043.72 for 1956. Expenditure amounted to \$214,299.73, compared with \$218,061.80 in 1956.

#### Central Experiment Station

54. *General*—Investigational work continued on the main plantation crops and included agronomic and pest and disease control studies. Legumes and fodders continued to receive attention. Pastures were expanded, mainly with Pangola Grass.

55. The banana nurseries at Golden Grove were closed down after a final delivery of 78,783 plants for the year.

56. *Outline of Investigations*—The agronomic and pest and disease investigations are briefly outlined below:—

- (a) *Sugarcane*—Variety trials; lime and fertilizer trials; multiplication and distribution of newly bred varieties (mostly originating in Barbados); moth borer studies.
- (b) *Cacao*—Evaluating the performance of various clones on different soil types; shade, spacing and fertilizer trials with clonal material; cultivation experiments; hybridization between heavy bearers and Witches' Broom resistant clones and the selection of progeny combining these qualities; processing and artificial drying; low volume spraying for the control of Black Pod Disease (*Phytophthora palmivora*); trials with different types of containers for growing rooted cuttings.
- (c) *Fruit Crops*—Rootstock, manurial and management trials with citrus; epiphyte control on grapefruit; investigations of Melanose and greasy



spot diseases of grapefruit; investigation of seedling lime disease; citrus nursery studies; observations on varieties of pineapple, guava and other tropical fruits; propagation techniques for mango.

- (d) *Coconuts*—Evaluation of selections for seed nut production.
- (e) *Bananas*—Low volume spraying with oil-based fungicides for the control of Leaf Spot Disease; control of Moko Disease; control of the Banana weevil borer.
- (f) *Rice*—Variety trials; selections for yield; observations on lodging; survey of moth borer damage.
- (g) *Fodder*—Observations on pasture grasses; pasture management.
- (h) *Soil Survey*—Survey of Southern Trinidad; analysis of samples; soil erosion investigations on various watersheds and under diverse cropping systems; drainage and percolation studies.
- (i) *Other Pest Investigations*—Stored products; parasol ants; mealy bug on pineapples; sweet potato borer; other pests of vegetables; termite investigations.
- (j) *Other Plant Disease Investigations*—Virus disease of cacao; bacterial wilt of tomatoes.
- (k) *Irrigation of Grass Lands*—Investigation of fodder, stool forming and grazing grasses under sprinkler irrigation systems; fertilizer distribution through the irrigation system.

### St. Augustine Station

57. *Citrus*—Because of dry weather, it was necessary to irrigate the Station during the greater part of the year so that plants could be lifted.

58. Despite this dry weather, 84,190 citrus plants were distributed, compared with 95,303 in 1956. Of this 25,588 were grapefruit, 56,114 were orange and 4,488 were of other types.

59. *Avocado Pear*—During the year 12,735 plants were sold compared with 14,298 plants in 1956. The budding of plants for distribution in 1958 has been completed. Over 14,000 plants were produced.

60. *Mango*—A total of 9,683 plants were distributed, compared with 5,702 in 1956. All requests for mango plants in the last half of 1957 were met.

61. A modified system of approach grafting was introduced during the year. Six-week old seedlings were lifted, covered with moss and wrapped in polythene bags. They were grafted directly onto the mother tree. This system enables plants to be produced more quickly and cheaply.

62. *Breadfruit*—The production of breadfruit plants continues. Slightly more than 1,000 plants were sold, compared with over 2,000 in 1956.

63. *Vegetable and Ornamental Plants*—The demand for vegetable and ornamental plants continues to increase. A total of 19,519 boxes was distributed. Comparative figures for 1953 to 1957 are given in Table XII.

64. A total of 54,600 decorative trees and shrubs was sold, compared with over 56,000 in 1956.

65. *Field Crops*—Planting material of maize, yam and pigeon peas was produced and sold for planting purposes as follows:—

|             |     |     |     |            |
|-------------|-----|-----|-----|------------|
| Maize       | ... | ... | ... | 301 lb.    |
| Yam         | ... | ... | ... | 26,744 lb. |
| Pigeon peas | ... | ... | ... | 727 lb.    |

In addition about 20,000 ears of green corn were sold.

66. *Orchard Crops*—The citrus orchard, which is used mainly as a source of budwood, yielded 536 crates of grapefruit and 586 crates of oranges.

67. *Cover Crops*—Blackeye peas and string beans were used as cover crops over an area of 10 acres during the dry season. Costings show that cash returns were much lower than the cost of harvesting.

68. Seed stocks of the cover crops, Sun Hemp, Tephrosia, Woolly Pyrol and Cow Pea, were maintained for seed distribution and for use on the Station.

69. *Tomato*—Some new varieties of tomatoes were compared for yields with Marglobe. The varieties Stonor's Money Maker and Stonor's Outdoor, gave yields much higher than Marglobe. These experiments are not conclusive and will continue.

70. Seedlings of tomatoes grown individually in 3½-inch clay pots, consistently gave yields twice as high as seedlings grown in seed boxes.

### Royal Botanic Gardens

71. *General*—Two plant houses and one orchid house were repaired. The more delicate foliage plants and ferns suffered whilst repairs were in progress, but they subsequently recovered.

72. On the slopes, south of the Lady Chancellor Road, 143 flowering trees were planted. These slopes are being converted from rough grass and shrubs into lawns with flowering trees and shrubs.

73. *Orchids*—The orchids have made considerable growth, but conditions in the house are only suitable for the flowering of a limited number of species. Repairs to one orchid house is contemplated for next year.

74. *Exchange of Planting Material*—Fifty-two requests for seeds and plant material were received from Botanic Gardens and Research Institutions from abroad and a total of 258 packets were supplied in answer to these requests.

75. *Introductions*—Plants added to the Department's collection included the following:—

1. *Bauhinia galpini*
2. *Peltophorum inerme*
3. *Monstera deliciosa* (Commercial variety)

4. *Kalanchoe blosfeldiana*
5. *Durio zibethinus*
6. *Nephelium lappaceum*
7. *Psidium guajava* (Variety Supreme)
8. *Mangifera indica* (Variety Kent)
9. *Myroxylon peruvianum*
10. *Cupressus lusitanica*
11. *Cupressus* (Sp. Hills of India)

76. *Queen's Park Savannah and Public Grounds*—The Queen's Park Savannah was maintained in a satisfactory condition throughout the year. A total of eighteen trees were planted as replacements for trees removed over the past few years.

77. Playing fields were allocated to 85 sports clubs.

78. The grounds of Knowsley House were put under the care of the Department.

79. At the request of the Chamber of Commerce, 147 flowering trees were planted along the North Coast Road to Maracas, in an effort to make the landscape more attractive.

### Sugarcane

80. At the Central Experiment Station, 74.25 acres of cane were reaped, yielding 2,173 tons or 29.3 tons per acre. Of the total, 458 tons were burnt cane. Excellent dry weather was experienced throughout the harvest and the crop was dispatched to the factory with the minimum of difficulty.

81. Approximately 18.27 acres were planted, including four variety trials. The main trials included the 17 varieties of the Barbados 1953 Series. A large number of multiplication plots was also planted.

82. Sixteen varieties of the Barbados 1955 Series were received from the British West Indies Central Sugarcane Breeding Station in Barbados. One variety from Puerto Rico, one from New Guinea, two from Australia and four from India were also received during the year.

83. Over 44,533 short plants and 15¼ tons of long plants, of the various varieties in stock were distributed to sugar estates for further multiplication and trial.

84. Twenty-six trials were reaped during the year by the Ste. Madeleine Sugar Co. and 11 by the Department of Agriculture at the Central Experiment Station. The statistical analysis of all 37 experiments was carried out at the Central Experiment Station.

85. The varietal position during the year is shown in Tables XIII and XIV. The percentage of each variety of the total estate acreage reaped is given in Table XIII. The percentage of plant cane acreage in accordance with varieties is shown in Table XIV.



86. The order of priority with regard to the commercial varieties remains the same as in 1956, with B. 37172 losing ground and B. 41227 showing the greatest advance. Slight gains occurred in B. 3337, which still retains the lead and B. 37161 which remains in third position. The expected decline of B. 34104 and B. 4362 continued.

87. With regard to plant cane reaped, B. 37161 remains in the lead but with only 26.58 per cent., against 34.38 per cent. in 1956. B. 41227 has dropped to third place with 25.08 per cent. while B. 37172 stands at 26.33 per cent., an advance on previous years.

88. The most noticeable event remains the rapid rise of B. 41227 which is especially marked in the plant cane figures.

89. Returns from the Island's five sugar estates show that 42,343 acres (an all time record) were reaped yielding 1,102,281 tons of cane, i.e., 26.03 tons of cane per acre reaped. In 1956, 40,918 acres yielded 1,062,313 tons of cane, i.e., 25.96 tons of cane per acre reaped. However, 1955 remains a record year when 39,001 acres yielded 1,183,687 tons, i.e., 30.35 tons per acre.

90. A moth borer survey was repeated at the Central Experiment Station on a more limited scale, just before harvesting of the crop and on the same five varieties as last year. Significant correlation was again obtained between yield and percentage borer infestation.

## Cocoa

### CLONAL AND FERTILIZER TRIALS

91. Routine operations continued on the trials already in existence, and the first yield data are now available. Of special interest is the high general performance of some of the Amazon clones. Yields of over 1,000 lb. dry cocoa per acre at four years have been recorded in some trials.

92. Four new trials were planted in 1957, three in Trinidad and one in Tobago. Several new clones including selected Trinidad hybrids are being tested.

### BREEDING AND SELECTION FOR WITCHES' BROOM RESISTANCE

93. A detailed examination of the hybrids planted in 1953 was undertaken. From these, eighty-eight trees were selected for multiplication and trial as clones.

94. A total of 9,222 hybrid seedlings were planted out at the Central Experiment Station.

95. Further hybridization work was carried out at Marper Farm using selected hybrids as parents.

96. A significant development during the period under review has been the discovery of hybrid cocoa seed, which places at the disposal of the cocoa industry a new source of improved planting material.

## CACAO PROCESSING

97. Extensive trials on artificial drying were carried out with special reference to the use of electricity as a source of heat.

98. Samples of the artificially dried cacao were considered to be as good as sun dried by users of Trinidad's premium cacaos.

## INSECT PESTS

99. A very severe infestation of whitefly, *Aleyrodidae* and the aphid, *Toxoptera aurantii*, Boyer, occurred in a cacao propagator at Gran Couva, although routine low volume spraying with Malathion had been practised at fortnightly intervals. Control was effected by high volume spraying with Parathion at monthly intervals.

## DISEASES

100. *Virus Disease*—Routine inspections of nursery fields and propagators were carried out at Non Pareil Estate, La Pastora, Marper, Mt. Valmont Estate, Spring Vale Estate, San Antonio Estate, San Juan Estate and San Jose Estate. Clonal plants were inspected at El Carmen Estate, Talparo. No virus infected plants were discovered except at Mt. Valmont Estate. Plants from the propagator of this estate are not sent to virus free areas.

101. An inspection was made of River Estate, Diego Martin, where a number of virus infected trees were discovered in various fields.

102. At Big Amandee Field, Non Pareil Estate, 53 infected trees and 109 contacts were removed. It is likely that more drastic measures, such as the cutting out of blocks of trees around foci of infection, are necessary in this field if infection is to be eliminated. At Wehdkind Field, no virus infected trees were discovered, indicating that the infection has apparently been eliminated in this field.

103. *Rosellinia Disease*, causative organism, *Rosellinia spp.*—An outbreak occurred at an estate in Gran Couva near to the location of a previous outbreak. Complete removal of diseased trees, and particularly of their roots, together with attention to drainage were recommended as control measures.

104. *Pod Diseases*—*Black Pod*, causative organism *Phytophthora palmivora* and *Witches' Broom*, causative organism, *Marasmius perniciosus*—Further trials, using low volume water based cuprous oxide formulations for the control of Black Pod and Witches' Broom pod infection, have again given increases in yield.

105. Similar trials using low volume oil based sprays have not given yield increases.

## Fruit Crops

### CITRUS

#### GENERAL

106. *Manurial Trials*—Three new manurial trials were started.

## ROOTSTOCK TRIALS

107. Growth measurements taken of stock and scion at the bud union have shown that Dominica Wild Grapefruit, Rough Lemon and Sampson Tangelo are the most vigorous stocks and that Cleopatra Mandarin is the slowest grower. The mortality of plants on sweet orange and Rough Lemon stocks was significantly higher than the other stocks. With both the orange and grapefruit, rough lemon rootstock gave the highest yields. The yields with the other rootstocks were fair, except with orange on Cleopatra Mandarin, which gave much lower yields than on the other rootstocks. The trial is just five years old and it is too early to evaluate the rootstocks according to their yields.

## TRANSPLANTING TRIAL

108. In this trial, now in its fourth year, no significant difference has been found so far in mortality after transplanting, rate of growth or yields, between plants put in "bare-root" and those set "en pilon".

## TREE MANAGEMENT TRIALS

109. The three experiments on tree management, one on height of budding; the other on height of heading and the third on pruning are in their fourth year. So far, no significant differences have been observed between treatments.

## FIELD MANAGEMENT TRIALS

110. No significant differences in yields from the various treatments applied to two field management trials have yet been obtained. The treatments applied consist of annual, perennial and natural weed covers; mowing and discing.

## ORANGE HARVESTING TRIAL

111. In this trial, which has been carried out for three consecutive years, three hormones were tested to determine their effect on reducing fruit drop. The indications are that the percentage of fruit dropped may be reduced by the use of a material suited to a particular variety. Further analysis of data is continuing to determine the effect of time and repetition of spraying.

## EPIPHYTE OBSERVATION TRIAL

112. Several materials were tried to observe their effect on epiphytes of grapefruit trees. It was found that some of the bromeliads and mosses could be controlled by spraying with 1 per cent. solution of copper sulphite or copper oxychloride, or 2, 4-dichlorophenoxyacetic acid at 20 p.p.m., but mosses seem to reappear after three months.

## MANURIAL TRIALS

113. (a) An experiment to determine the optimum level of nitrogen application and the effect of additional applications of phosphate, potash and lime on mature grapefruit trees, was laid down on three sites representing the largest grapefruit producing areas of the Island.



(b) In order to determine the effect of minor elements on low yielding grapefruit trees, an experiment was laid down on three representative sites to show the effect of zinc, boron, manganese and magnesium in combination with nitrogen and potash applications.

(c) In order to determine the general nitrogen response curve for grapefruit trees in the Island, ten replications of a simple experiment, with three levels of nitrogen application, were put down on orchards representing the grapefruit producing areas of the Island.

114. The manurial treatments to these experiments were applied during the year and yield records will be obtained from the 1957-58 crop.

#### NURSERY

115. A pilot nursery was started to determine the practicability of raising citrus plants on the Central Experiment Station. A sour orange seedling nursery was grown successfully, but there were appreciable deaths after transplanting. These were caused by the heavy nature of the soil and the effects of a dry period soon after transplanting. Over 4,000 of these seedlings were budded with orange and grapefruit scions. These have produced healthy and vigorous plants.

#### CITRUS MUSEUM

116. The citrus collection has 34 edible and 24 inedible varieties. Several of these varieties fruited for the first time.

#### PESTS

117. *Insects*—An outbreak of the Colonial Spider (*Theridiidae*) which causes webbing of citrus trees, was effectively controlled by a low volume spraying with B.H.C. in an oil base.

118. Nests of the Black Bee, *Trigona trinidadensis*, were located near to the Central Experiment Station and destroyed effectively by spraying with Aldrin and cutting down the nests.

119. Serious attacks by fruit piercing moths (*Noctuidae*) probably *Athysania* (*Gonodonta*) *spp.*, occurred on citrus at Pointe-a-Pierre, Sangre Grande, Rio Claro and d'Abadie.

120. An experiment was put down on an estate near to the Central Experiment Station for the control of citrus rust mite, *Phyllocoptes oleivorus*, *Ashm.*

#### DYING OUT DISEASE OF LIME

121. Observations at Toco have shown that lime, on its own roots, is very susceptible to the disease. In an experiment, most of the seedlings and plants raised by cuttings died; whereas limes on other rootstocks have survived and are doing well. The rootstocks being tested are Rangpur Lime, Dominica Wild Grapefruit, and Sweet Orange.

#### SEPTORIA SPOT OF GRAPEFRUIT

37502  
122. A disease of grapefruit, not previously recorded in Trinidad, has been observed at Lopinot and at an estate in the Blanchisseuse Valley. Symptoms consist of reddish brown spots on leaves and fruit. Those on the fruit vary from 1 to 10 m.m. in diameter and cause disfigurement, so that they are rejected for export purposes. Fungal fruiting bodies of *Mycosphaerella* spp. and *Septoria* spp. have been found consistently associated with the spots. The disease is presumed to be "Septoria Spotting", which has been reported from other countries. Investigations are in progress and preliminary results of a spray trial, using copper oxychloride at low volume, shows promise of control.

123. The disease is alleged to have been present in the two areas for a number of years and evidence indicates that it is the environmental conditions at these localities which lead to the manifestation of symptoms.

124. During the investigations the causative organism of "Black Spot" Disease of citrus, *Gingnardia citricapa* was observed. Symptoms of this disease have not been previously recorded in Trinidad.

#### SCAB

125. The use of low volume and high volume sprays, at different frequencies of application, is being tested for the control of Scab (causative organism, *Elsinoe fawcettii*) on grapefruit. The trial is to be harvested early in 1958.

#### MELANOSE

126. The use of low volume water based and oil based sprays, and of high volume sprays is being tried for the control of Melanose, causative organism, (*Diaporthe citri*) of grapefruit. Results will be available in 1958.

#### TRISTEZA

127. A number of grapefruit trees have died at an estate in Talparo following a long dry period. Samples of bark have been examined at the University of California and it is reported that abnormal anatomical features present in the samples are indicative of Tristeza. Full investigation, including transmission studies, is planned for 1958. The efficient vector of Tristeza, *Toxoptera citricidus*, is not known to occur in Trinidad.

#### BARK DISEASES IN LEMONS

128. Perrin lemons at an estate in St. Ann's have been severely attacked by a bark disease, the causative organism of which was not determined. Conditions appear to favour the disease at this locality and it is likely that the small orchard of lemon trees will be a total loss. Other types of citrus are doing well on the same estate.

#### GUMMOSIS IN GRAPEFRUIT (Causative organism, *Phytophthora parasitica*)

129. Grapefruit trees on an estate in San Raphael, in an area subject to flooding, were badly attacked by Gummosis.

## Bananas

### PLANTING MATERIAL AND NURSERIES

130. At the Golden Grove Nursery, a total of 78,783 plants were distributed. The nursery was closed down at the end of May. The demand for plants remained high and a further 113,000 suckers were imported from St. Lucia and St. Vincent and sold to growers at the same price as nursery plants.

### PESTS AND DISEASES

131. *Banana Borer Weevil*, *Cosmopolites sordidus* Germ.—An experiment carried out at the Central Experiment Station for control of the banana borer weevil was completed after two years of uninterrupted growth. Untreated suckers showed only 61.8 per cent. healthy compared with suckers treated only once before planting, which ranged from 91.2 per cent. (dipped in Aldrin) to 99.5 per cent. (dusted with Aldrin).

132. *Moko Disease* (causative organism *Pseudomonas solanacearum*)—Outbreaks of this disease have been recorded in a large banana cultivation at Rio Claro and in bananas interplanted with coconuts at Manzanilla.

133. At the estate in Rio Claro, the soil has very inadequate internal drainage. The important factor in this outbreak is probably water logging. Greatly improved drainage is recommended, along with sanitary measures.

134. At the estate in Manzanilla, the use of infected planting material is thought to have led to the high incidence of the disease, since an adjacent planting with disease free suckers has shown no cases and because the drainage in the area is good. Sanitary measures are recommended for control.

135. In a trial laid down at El Reposo Demonstration Station, Sangre Grande, certain cultivation and soil treatments applied to infested soil have allowed replanting without loss for up to two years, that is, from July 1955 to July 1957. Treatments include proper drainage, soil fumigation and the application of lime. In the last few months of 1957, a number of cases of Moko Disease have appeared scattered throughout the experimental plot, and this has probably been caused by infection from cultivation implements, since incidence of the disease in other fields at the Station is high.

136. *Leaf Spot Disease* (causative organism, *Mycosphaerella musicola*)—New products were tested in an attempt to find a cheaper substance for control of this disease by low volume spraying. The products tested include an antibiotic substance, Actidione, a wax emulsion and new spray oils. The experiments continue. Present indications are that while the spray oils give as good results as those now in use, the Actidione does not give as good control and is phytotoxic, while the wax emulsion required the inclusion of a copper fungicide.

137. In the trials carried out this year, oil alone has given as good results as oil with copper fungicide.



138. A pilot Leaf Spot Spraying unit consisting of a Land Rover and two Motoblo sprayers was put into operation on a trial basis. Selected plots, situated at suitable points all over Trinidad, were treated at three-weekly intervals with a mixture of spray oil and copper oxychloride. The results achieved were very satisfactory and it is planned to start a spraying service to banana growers in 1958.

139. *Nematode Infection*—Banana root samples sent to the Nematology Department of the University of Florida have been reported to be infected with *Radopholus similis*, an eelworm which causes "Blackhead Toppling" disease of bananas in Jamaica. This disease has not yet been reported in Trinidad.

140. *Potash Deficiency*—Potash deficiency has been diagnosed in bananas at an estate at Matura. The characteristic symptoms of this condition is a premature yellowing of leaves followed by a browning or burning, particularly at the tips of leaves. The symptoms do not always appear upon the oldest leaves of the plant, as would be expected, but manifest themselves upon younger leaves. If it is possible that this condition is more widespread in Trinidad, proper fertilizer application would give greatly increased yields.

### Mango

141. A new method "The 'T' Graft Method" (not to be confused with the modified system of grafting mentioned in para. 61) has been developed at the Central Experiment Station. An erect 'T' cut is made on four month old seedlings as root-stock. At this point, a terminal scion is inserted between the bark and the wood. A sloping diagonal cut, about one to one and a half inches long, is made to the scion and the cut surface is placed against the wood of the stock. Seedlings may be grown in pots or in the field, but better results are obtained in the field. This method is estimated to cost less than one-quarter of the cost of the approach graft method.

142. Several new varieties of mangoes have been introduced from Florida. These include Alphonse, D.B. Alphonse, Haden, Paheri, Mullgoa, Palmer, Edward Eldon, Ruby, Erwin, Carrie and Keith.

### Pineapple

143. Introduced varieties of Ripley, Bullhead and Natal Queen are being multiplied.

144. Black Antigua, Sugar Loaf and Smooth Cayenne are being grown on a commercial basis.

145. In an experiment to determine the effect of hormones on accelerating pineapple flowering, it was found that naphthalene acetic acid, applied at ten parts per million, significantly accelerated the flowering of the Black Antigua variety.

### Coconuts

146. Harvesting and yield recording continued on the coconut selection trial at the Central Experiment Station.

147. Growth of young trees, in a similar trial at Tyrico Bay, has not been satisfactory. It is planned to replant the trial in 1958.

148. Provision has been made for a research team under the direction of Dr. D. W. Fenwick, Nematologist, to investigate Red Ring Disease (causative organism, *Aphelenoides cocophilus*). In the meanwhile an observation trial on soil fumigation treatments under conditions of good and poor drainage has been started.

## Rice

### RICE EXPANSION PROGRAMME

149. *Plum Mitan and Fishing Pond Rice Expansion Schemes*—The Works and Hydraulics Department completed internal developments of these two schemes and handed them over to the Department of Agriculture. Field Assistants are now stationed in two completed houses at Plum Mitan and Fishing Pond. The Schemes are administered with the help of a small committee consisting of the Warden, Agronomist (Rice) and a resident of the district.

150. A total of 103 acres was rented to farmers on temporary and seasonal agreements at Plum Mitan and 132 acres at Fishing Pond.

151. The areas of paddy actually planted were 103 acres at Plum Mitan and 132 acres at Fishing Pond.

152. *Caroni Savannah Scheme*—The main drainage works are still being maintained by the Works and Hydraulics Department.

153. Soil samples continued to be taken quarterly instead of monthly to determine the leaching of chlorides.

154. *Central Experiment Station Paddy Fields*—An area of  $11\frac{1}{2}$  acres was used for experimental purposes and rice selection work. An area of  $3\frac{1}{2}$  acres was cultivated with dry season crops.

155. An area of 89 acres was cultivated in the wet season for the purpose of seed multiplication.

156. The Pump House, damaged by flood during November, 1956, was repaired early in the year. New pumps were however not installed during the latter part of the year.

157. After deducting that part of the seed crop which is unsuitable for planting, the following quantities of seed remain in stock for distribution to farmers during, 1958, subject to satisfactory germination tests :—

|          |     |     |     | lb.                 |
|----------|-----|-----|-----|---------------------|
| D 52/37  | ... | ... | ... | 11,700              |
| Sughandi | ... | ... | ... | 17,100              |
| D 110    | ... | ... | ... | 85,800              |
|          |     |     |     | <hr/> 114,600 <hr/> |

## SEED PADDY DISTRIBUTION

158. The demand for pure line seed paddy was higher than in the previous year. The amount distributed during the past two years with the help of the Extension Division is as follows:—

|          |        | 1956           | 1957          |
|----------|--------|----------------|---------------|
|          |        | lb.            | lb.           |
| D. 52/37 | ... .. | 2,085          | 2,933         |
| D. 110   | ... .. | 5,136          | 14,017        |
| Sughandi | ... .. | 6,654½         | 4,404         |
|          |        | <u>13,875½</u> | <u>21,354</u> |

## SEED PADDY COMPETITIONS

159. Competitions were arranged in South Trinidad, Plum Mitan and Fishing Pond for the purpose of encouraging farmers to produce and retain pure line seed paddy.

## ENGINEERING INVESTIGATION FOR RICE EXPANSION

160. Investigations by a firm of Consulting Engineers commissioned by the F.A.O., which started at the end of 1954 were completed in the month of September, 1956. The final report which is being studied by Government was received towards the end of 1957.

## Grasses and Forage

161. Approximately 115 head of cattle were carried throughout the year at the Central Experiment Station. Twenty-seven acres were established in Pangola Grass, *Digitaria decumbens*, and 8.5 acres in Elephant Grass, *Pennisetum purpureum*. No other types of grass were planted. Building accommodation is now adequate but much unimproved pasture remains to be planted in Pangola Grass.

162. The 12½ acres of Kudzu, which were planted in October, 1952, are still growing strongly in spite of weed invasion. Little use was made of this field throughout the year.

163. The planting of Elephant Grass has been limited to the maintenance of a small acreage which provides cut fodder for chaffing. The older fields are being grazed and are due for replanting in Pangola Grass in 1958.

164. Various methods of land preparation and of planting Pangola Grass were tested during the year. The scattering and rotary hoeing into the ground of cut planting material with no roots was not satisfactory. The scattering and rotary hoeing into the ground of rooted planting material, was reasonably successful, providing that wet weather followed the operation. Growth was, however, slow and this allowed a very heavy invasion of weeds. Very successful results have been obtained by the following method:—

1. Plough in January (start of the dry season);
2. Fallow until May, harrowing once or twice;
3. Rotary hoe after the first June showers;
4. Hand plant with fairly large rooted clumps at 18" × 18"



The fallow gives great freedom from weed infestation and grazing may follow eight weeks after planting, in good conditions. The method, though certain, is however expensive.

165. Successful work was done on the extension of Pangola Grass to commercial estates. Towards the end of the year it became difficult to supply public demand for planting material the shortage of which is, at present, the limiting factor in the extension of this grass.

### Pest and Diseases on Specified Crops

166. *Rice*—Sampling of rice stools for moth borers at the Fishing Pond Scheme showed that the incidence of damaged stems was small and that damage by moth borers was not causing true "white heads".

167. *Sweet Potato*—A further experiment on the control of the sweet potato moth borer, *Megastes grandalis* Gn., was completed at the Golden Grove Prisons. Only produce suitable for market purposes was included and yields were very good. Untreated plots yielded 7,941 lb. per acre, compared with the best treatment of 11,509 lb. per acre from plots sprayed every ten days with Dieldrin.

168. *Tomato*—Root knot eelworm, *Meloidogyne*, *sp.*, proved to be the limiting factor in the growing of tomatoes at Gran Couva where other pests, such as the cutworms *Heliothis amigera*, Hubner, and *Laphygma frugiperda* S. and A., also the leaf miner, *Liriomyza strigata*, Meig., were kept under control by low volume spraying with D.D.T.

169. Investigations are in progress with the use of a commercial agricultural preparation of Streptomycin for the control of Bacterial Wilt of tomatoes (Causative organism, *Pseudomonas solanacearum*). This disease is very serious during rainy months of the year.

170. *Cassava*—The cassava shoot fly, *Lonchaea chalybea*, Wied., was successfully controlled at the Central Experiment Station by destroying infested shoots and spraying young growth with D.D.T.

171. *Maize*—Damage to the central shoots of maize near to the Central Experiment Station, was diagnosed as due to the corn leaf-hopper, *Peregrinus maidis*, Ashm.

172. *Locusts*—A serious outbreak of locusts, *Tropidacris dux*, occurred in the Cedros area. They are nearly always present in relatively small numbers in the same area every year. Coconuts, immortal trees and bananas were attacked, in order of severity. Experimental low volume spraying carried out over about eighty acres showed excellent control with Dieldrin.

### Soil Survey

173. Work continued on the Soil Survey of Southern Trinidad and 63,200 acres were completed. Districts surveyed included La Brea, Kern, Sobo, Cruse, Guapo, Palo Seco, Apex, Parrylands, Rousillac, Erin, and Mon Desir. Eight new soil series were described.

174. A total of 6,612 analyses were completed in the Soils Laboratory during the year. These included 1,669 foliar analyses, 1,208 sugarcane analyses, and 497 analyses on samples from run-off experiments.

## Soil Conservation

### EROSION INVESTIGATIONS

175. (a) *L'Esperance Run-off Trials*—These trials designed to assess the status of run-off and soil losses from Las Lomas soil type under different types of vegetative cover, continued in their fourth year of observation with routine collection of rainfall and run-off data.

(b) *El Carmen Sugarcane Run-off Trials*—Results from two plots, established with high cambered beds and cropped in sugarcane on Cunupia silty clay soil type, indicate negligible soil losses over a three year period of observation.

(c) *Rio Claro Sugarcane Run-off Trials*—These trials (eight plots) were established on Princes Town clay to assess soil losses associated with different cultural practices. Run-off and rainfall data collected over the past three years indicate average annual soil losses, from all the plots, of four tons per acre.

(d) *Mt. St. George Run-off Plots*—Three types of land use associated with Tobago peasant hillside agriculture are under observation. Two years run-off and rainfall data are now available for study.

(e) *Five Rivers Small Watershed Run-off Trials*—Two systems of land use under Trinidad hillside conditions are in their third year of observation. Run-off and erosion data for this period are available for comparing the relative effects of shifting cultivation and strip-cropping systems of conservation farming.

(f) *Brickfield Forest Watershed Trials*—These trials are being run in co-operation with the Forest Department and consist of three small watersheds on which comparative data are being collected on rainfall, run-off and erosion, associated with natural (secondary) forest and the process of its clearing and conversion to, and maintenance of, teak stands. The small plot (1/70 acre) trials established last year to assess the magnitude of sheet erosion as distinct from erosion from all causes (including gullyng, gully caving, &c.) are also being maintained.

### DEMONSTRATIONS

176. The Maracas Land Use Demonstration, which was established for observational purposes, is being maintained by the Land Settlement Division.

## Agricultural Engineering

### IRRIGATION ON STATIONS

177. The sprinkler irrigation system at the St. Joseph Farm was used throughout the dry season and gave good performance. A tractor fitted with a light metal rack is now used for transporting the 5-inch mains between fields. The fertilizer distributor attached to the system worked very well and the irrigated fields were fertilized only by this method.

178. At St. Augustine Nurseries, the irrigation system was used throughout the year on nurseries and vegetables. The system designed for the station has not been fully installed as yet, and it is hoped to complete installation in 1958.

179. A small portable irrigation system was designed for use in the nurseries at the Central Experiment Station.

180. The system installed on the Tobago Farm also gave satisfactory performance during the dry season. It was used periodically during the wet season because of unusually low rainfall. Insufficient reservoir capacity is, at present, limiting the use of the system. It is hoped to enlarge the reservoir in 1958.

181. The off-peak demand period rates offered by the Trinidad and Tobago Electricity Commission has made electricity an economic source of power for agricultural purposes. Pumping falls in the class of operation served by off-peak rates. It is found that the power cost in 1957, for pumping, was approximately 2.1 cents per thousand gallons of water discharged at 80 pounds per square inch pressure.

#### IRRIGATION TRIALS

182. The first results from an irrigation trial at the St. Joseph Farm with Elephant Grass show some promise. The plots which received the highest water application and were fertilized gave an increase of about 55 per cent. over plots which were not irrigated but fertilized. The increase on plots which were not irrigated or fertilized was in the region of 390 per cent. This trial will be continued in the next dry season.

183. At the St. Augustine Nurseries, a trial was designed to compare the yield and production cost of vegetables which were irrigated by a portable sprinkler system with those irrigated by the hand methods commonly practised in the vegetable producing areas of Trinidad. Lettuce and cauliflower gave higher yields when sprinkler irrigated; tomatoes showed little difference. Hand watering costs considerably more than watering by sprinklers for the same quantity of water applied. With sprinkling, the cost of water application was a small percentage of the growing cost, whereas with hand watering it constituted the bulk of the growing cost. The experiment will be repeated in 1958.

184. Tests continued on the precipitation patterns of various types of sprinklers under varying wind conditions. The results again showed marked distortion in the precipitation pattern with wind speeds over 4 m.p.h.

#### EVAPO-TRANSPIRATION

185. Evapo-transpiration measurements on sugarcane were started in October. Preparations are being made for these measurements to be made on Elephant and Pangola Grass.

#### CULTIVATION

186. A cultivation trial was laid down to find the best practical methods of improving the physical condition of heavy clay soils to provide optimum plant-soil-water relationships. Unfortunately, the abnormal long dry period during the rainy season never allowed the soil to reach the normal water logged condition which would show up the differences in treatment responses.



## **BUILDINGS**

187. A drying shed for processing cacao was built at the Gordon Millar Land Settlement. The design took into special consideration the aspect of handling material. The site provided good facilities for placing the building in a manner which will reduce the labour requirements and facilitate the sequence of operation through the various processing stages.

188. Plans for bull pens and a quarter for the Artificial Insemination Centre, St. Joseph Farm were prepared. By the end of the year the quarter was completed but the bull pens had still to be fitted with imported accessories which arrived late.

## **MACHINERY**

189. Departmental equipment was maintained in a satisfactory condition. The machine shop of the Central Experiment Station was able to handle all overhauls and repairs. The servicing section, also, maintained a good standard of work.

190. Two recent knapsack type sprayers depart slightly in principle from the earlier models. Instead of a high velocity-low volume air output, the new models provide low velocity-high volume air discharge, and for this purpose an axial flow fan replaces the blower. The general improvement in low volume spraying equipment has been outstanding and its use lends much to improve plant protection methods.

## **Apiculture**

191. There were 256 registered apiaries in the Colony, compared with 242 in 1956.

192. The weather during the honey season from January to June was favourable for beekeepers and a good crop of honey was obtained. It was estimated that the average yield from a colony of bees was 54 lb. of honey and 1.2 lb. of wax.

193. Prices of honey varied from \$14.00 for a four gallon tin at the beginning of the year, when there was a scarcity, falling during the year to \$9.00 per tin when honey was plentiful and rising to \$11.00 per tin at the end of the year.

194. Retail prices were steady at 36 cents for a clear glass bottle and 54 cents for a 1-lb. jar. The average wholesale price of wax was \$1.00 per lb.

195. As far as it is known there were no infectious diseases in bees in the Colony and neither the wax moth nor the hunting ant did much damage.

196. Departmental apiaries, for the purpose of demonstration, were maintained on the following stations:—St. Augustine, La Pastora, El Reposo, Penal, Rio Claro and the Central Experiment Station in Trinidad and Mt. St. George in Tobago.

197. Over 150 queens were bred at the St. Augustine Station for sale to the public, either as queens or in three-frame nuclei and for re-queening Departmental hives.

198. Most of the apiaries in the Colony were visited. Monthly visits were made to four elementary schools that now have hives.

199. The Inspector of Apiaries gave a course of twelve lectures at the Eastern Caribbean Farm Institute.

200. Demonstrations and displays were given at the Poultry and Goat Show, the Caribbean Trade Fair and Cane Farmers' Livestock Shows.

201. The Co-operative Beekeepers' Society handled a little over 16½ tons of honey of which 10½ tons were exported and 6 tons packed in jars and bottles for local sale. The Inspector of Apiaries continues to function as Secretary-Manager of the Society.

### Animal Health

#### INCIDENCE OF ANIMAL DISEASES IN THE CARIBBEAN

202. Livestock diseases as they occurred in the Caribbean, were reported through the Animal Diseases Reporting Service of the Caribbean Commission. Table XV presents a summary of the notifiable diseases which affected stock in the Colony.

#### LEGISLATION

203. There were two amendments—Government Notices 88 and 96 as specified in the Appendix on Legislation.

#### NOTIFIABLE DISEASES

204. *Paralytic Rabies (Bat transmitted)*—Rabies was diagnosed by laboratory means in three cattle.

205. The low incidence of the disease is particularly attributed to the mass vaccination of stock. Flury vaccine was used throughout the year. It replaced tissue vaccine in late 1955. Comparative figures of vaccination carried out and confirmed cases of the disease over the past three years appear in Table XVI. The practice of immunising sheep and goats was discontinued during the course of the year.

206. The Standing Paralytic Rabies Committee, comprising a representative of the Health Department, Dr. C. R. Anderson, Virologist, Trinidad Regional Virus Laboratory, Dr. R. Marcano, Medical Officer of Health, Port-of-Spain, the Veterinary Officer (Rabies) and the Deputy Director of Agriculture (Animal Husbandry), as Chairman, continued to direct the programme in connection with the disease.

207. The technical officers concerned with rabies, bats, and their inter-relationships received further training during the course of the year.

208. Rabies was diagnosed by laboratory means in three cattle. Other local material examined for rabies included brain from 1 donkey, 6 mongooses, and 513 bats; of these, 6 vampire bats (*Desmodus* species) and 1 fruit-eating bat (*Artibeus* species) were positive.

209. The brain from a dog, submitted from Grenada, was found to be positive.

210. Twenty-seven persons actively engaged in the rabies programme or prone to exposure were immunised with Lederle High Egg Passage Flury vaccine.

211. A total of 2,557 bats, representing about 37 species, were received by the Zoologist from the field staff. Six hundred and four were vampires as compared with 1,110 and 823 in 1955 and 1956 respectively. The specimens were studied with regard to taxonomy and habits. A Field key to the identification of bats by families was completed and it is now proposed to prepare a key for their identification by species. These studies are being carried out in close co-operation with the American Museum of Natural History with whom joint publications are envisaged.

212. The educational aspect of the rabies programme took the form of film shows (a film which explains transmission and control), lectures, and poster distribution.

213. *Swine Fever*—This was the fifth consecutive year during which no outbreaks occurred.

214. A total of 1,659 pigs were immunised with Crystal Violet Vaccine, compared with 1,876 in 1955 and 1,892 in 1956. These figures include vaccinations of piglets sold by the Department.

215. *Newcastle Disease*—There were three outbreaks of Newcastle Disease. These appear to have occurred principally amongst birds free to wander throughout the local community.

216. *Tuberculosis*—The results of tuberculin testing in the various classes of livestock during 1955–1957 are shown in Table XVII. The comparatively low numbers tested in 1957 were due to staff shortages. The incidence of this disease continues to be low in cattle. Almost one quarter of the goats tested reacted.

#### NON-NOTIFIABLE DISEASES

217. These did not differ greatly from those customarily encountered. They include tetanus, mastitis, malnutrition and metabolic diseases, parasitism, dystokia, digestive disturbances, and traumatism in general.

#### VETERINARY ATTENDANCE—POLICE HORSES AND DOGS

218. The animals maintained by the Police Department were given routine and special attention throughout Trinidad and Tobago.

#### VETERINARY PRACTICE SERVICE

219. The area in which Departmental Veterinary Officers are not required to render services to privately owned utility animals, was reduced from a radius of 12 miles to one of 8 miles surrounding the surgery of a private practising Veterinary Surgeon.

220. During the year 544 cases were attended to, compared with 646 in 1955 and 495 in 1956. These include cases at the Prison, Eastern Caribbean Farm Institute, and Imperial College of Tropical Agriculture farms.

#### VETERINARY DIAGNOSTIC LABORATORY

221. The Veterinary Officer assigned to Rabies was also in charge of the Veterinary Diagnostic Laboratory. Supporting staff comprised one Scientific Assistant, Grade II, one Scientific Assistant, Grade III and a Handyman.



222. The nature of the work carried out is outlined below:—

1. *Milk (Farm and Purchased)*—Routine tests with regard to Bacteriological Examination of raw and pasteurised milk, milk bottles and cans; Phosphatase test; the Resazurin test and Lactometer readings, made on purchased milk.
2. *Parasitological*—Faecal and autopsy examinations on all classes of livestock including poultry.
3. *Rabies*—Diagnosis based on the presence or absence of Negri bodies in impression smears, using Seller's stain together with subinoculations into mice when necessary. Bat and animal material were examined.
4. *Autopsies*—On all classes of livestock, including poultry.
5. *Serological*—Restricted to testing for Brucellosis.
6. *Miscellaneous*—Blood smears and bacteriological examinations.

### Animal Husbandry

#### LIVESTOCK SHOWS

223. The following livestock shows were held during 1957:—

1. Three Cane Farmers' and Peasants Shows.
2. The Tobago District Agricultural Society Show.
3. The joint shows sponsored by the Trinidad Poultry Association and the Trinidad Goat Society.

224. At these, the Animal Husbandry Division exhibited stud animals and posters in connection with Paralytic Rabies, Fowl Pox, Newcastle Disease and Artificial Insemination. Fodder grasses were distributed; the Department donated as prizes, three trios of White Rocks and made available, at reduced prices, for prizes, three bull calves, three bucklings and a piglet boar.

#### BREED IMPROVEMENT

225. *Service by Selected Sires*—A summary of natural services by selected sires at Stock Farms and District Breeding Units throughout the Colony is shown in Table XVIII. These figures represent initial services only and do not include services amongst Departmental stock.

226. *Artificial Insemination*—The scope of the Artificial Insemination programme (cattle) was extended in November to the area in and around San Fernando and initiated in Tobago. There were three full-time and four part-time Inseminators involved throughout the Colony. A total of 1,854 first services were carried out.

227. *Sale and Distribution of Surplus High Grade Breeding Stock*—All classes of high grade breeding stock, including poultry, were sold to the general public. Cattle were sold at auction and also under agreements to selected peasants at reduced rates.

Horsekind, sheep, bucks, pigs and poultry, were sold at current market values; dairy type goatlings were sold at auction while some pure bred cockerels were exchanged, on an approximate weight basis, for grade cockerels. A summary of all breeding stock sales from the two Farms and the Central Experiment Station is given in Table XIX.

228. Sales of breeding stock from the remainder of the Department are given in Table XX.

229. *Importation of Breeding Stock*—Two bulls, 8 large black boars and 633 chicks were purchased by the Department of Agriculture for breeding purposes. One bull (pure bred Zebu) was imported from Jamaica and the boars and chicks were imported from Barbados and the United States of America respectively.

#### DEPARTMENTAL LIVESTOCK

230. The comparative total livestock strengths at the St. Joseph, Tobago and Central Experiment Station Farms, are given in Table XXI. These and other figures of livestock strengths represent the population at the 31st December, of the years shown.

#### CATTLE

231. *St. Joseph Stock Farm*—Two herds were maintained at the St. Joseph Stock Farm, one a dairy herd of Holstein-Zebu crosses and the other a pure bred Zebu herd. The breeding policy of the dairy herd remained unchanged pending implementation of the Lecky recommendations while  $\frac{3}{4}$  Holstein Bulls were mated to Zebu Females and Zebu Bulls to Zebu Females. Herds remained to pasture at all time except when brought in for milking. The annual production of milk was a record, 64,432 gallons from a daily average of 76 milking cattle.

232. Comparative milk figures are given in Table XXII. There were twelve first calvers in the herd and their overall daily average was 27 lb. Rigid culling of the dairy herd was not practised in view of the policy to maintain a full complement of breeding females. The cattle population, including 37 water buffaloes, was 410.

233. *Tobago Stock Farm*—Three herds were maintained in Tobago, totalling 143 head, viz: pure bred Sahiwal, pure bred Jamaica Red, and a grade herd comprising Holstein, Zebu, Sahiwal and Jamaica Red Blood. The breeding policy was to mate the Sahiwal and Jamaica Red herds pure, and to up grade the grade cattle with Jamaica Red Bulls. A total of 5,727 gallons of milk was produced, compared with 2,919 in 1955 and 5,744 in 1956. A small milking herd of Holstein-Zebu Females was bred to  $\frac{3}{4}$  Holstein Bulls.

234. *Central Experiment Station*—A single Holstein-Zebu herd of 74 cows and 35 heifers was maintained; these were bred to  $\frac{3}{4}$  Holstein Bulls. Surplus offsprings from this herd were distributed to peasant farmers. A total of 31,797 gallons of milk was produced, compared to 25,515 gallons in 1956. An electric milk cooling unit was installed in the dairy. Only cattle are bred at the Central Experiment Station.

235. *Horsekind*—The policy with regard to horsekind was to make jacks available for both donkey and mule breeding and light-draft stallions for horse breeding. The horsekind strengths on the Farms are given in Table XXIII.

236. *Pigs*—The Large Blacks and Berkshire breeds were maintained pure. A total of 598 live pigs farrowed, compared with 446 in 1956. At the St. Joseph Farm, the average litter sizes were 8 for Large Blacks and 7 for Berkshire. The pig strengths of the Farms are shown in Table XXIV.

237. *Goats*—Two breeds were maintained, viz: British Alpine and Anglo-Nubian; they were bred pure. In Tobago, a grade herd is being up graded with Anglo-Nubian Bucks. The goat strengths amongst the Farms are shown in Table XXV.

238. *Sheep*—This class of livestock is kept in Tobago. Two pure bred flocks exist, a Black Head Persian and Barbados Black Belly. A number of grade females is being up graded with Barbados Black Belly Rams and others with Black Head Persian Rams. The total strength on the Tobago Stock Farm was 66 adult sheep and there were 90 births.

239. *Poultry*—Five breeds were maintained at the St. Joseph Stock Farm (Rhode Island Red, White Leghorn, White Rock, Barred Plymouth Rock and Cornish) and two (Rhode Island Red and White Leghorn) at the Tobago Stock Farm. Table XXVI shows the poultry strengths on the Farms.

240. There was a considerable fall in egg production due largely to a reduction in the laying flocks. Indeed, there was an average reduction of 86 laying hens less than in last year, these birds having been supplied as replacement stock to the Extension Division. This is not apparent in Table XXVI as a number of pullets joined the laying hens towards the end of the year. Egg production was as follows:—

|                |     |     |        |
|----------------|-----|-----|--------|
| St Joseph Farm | ... | ... | 62,940 |
| Tobago Farm    | ... | ... | 22,530 |
| TOTAL          | ... | ... | 85,470 |

241. A total of 15,680 chicks was sold, compared with 11,335 in 1956. Hatchability was 56 per cent. compared with 61 per cent. in 1955 and 66.4 per cent. in 1956.

242. The emphasis on increased production necessitated moderate culling and the annual production per bird is shown hereunder:—

| <i>Eggs per bird per annum</i> |     |      |      |
|--------------------------------|-----|------|------|
|                                |     | 1956 | 1957 |
| Rhode Island Red               | ... | 212  | 200  |
| White Leghorn                  | ... | 181  | 173  |
| White Rock                     | ... | 183  | 171  |

243. The increased use of deep litter houses resulted in appreciable cuts in the labour force.



244. There were no outbreaks of disease and mortality was low in adult stock—2.74 per cent. to 4 per cent. amongst the various breeds. Chick mortality, however, varied from 9.2 per cent. to 16 per cent. In a small group of Barred Plymouth Rock Chicks, mortality was 28 per cent. Three hens reacted to the Pullorum Test.

#### TOTAL CONSUMPTION SALES

245. Total consumption sales of livestock and livestock products from the two Farms and the Central Experiment Station are shown below:—

| <i>Cattle</i> | <i>Goats</i> | <i>Sheep</i> | <i>Pigs</i> | <i>Poultry</i> | <i>Eggs</i> | <i>Milk and<br/>Cream</i> | <i>Meat, beef,<br/>pork and<br/>mutton</i> |
|---------------|--------------|--------------|-------------|----------------|-------------|---------------------------|--------------------------------------------|
|               |              |              |             |                |             | (gal.)                    | (lb.)                                      |
| 62            | 22           | 38           | 33          | 443            | 48,389      | 82,159                    | 5,892.5                                    |

#### FEEDING TRIALS, ETC. WITH DEPARTMENTAL STOCK

246. *Pig Feeding Trial*—The trial was carried out with Large Black and Berkshire Pigs from weaning for a period of twelve weeks and the gains in weight compared. The rations tested were unlimited supplies of (a) a standard balanced pig ration, and (b) ripe bananas (in skins) and fish meal. It was found that:—

- (1) Bananas plus fish meal gave significantly higher weight gains than the standard balanced pig ration.
- (2) The weight of food consumed per lb. increase in body weight, was 3.83 lb. in the case of ration (a) and in the case of ration (b)—11.2 lb. of bananas and 0.96 lb. of fish meal.
- (3) There was no significant differential response to treatment associated with the breed or sex of the pigs.

247. *Broiler Trial*—Newhampshire, White Plymouth Rock and reciprocally crossed Newhampshire and White Plymouth Rock chicks were fed a broiler starter ration from one day to six weeks of age and a broiler finisher ration from the seventh to the tenth week of age. Weight gains were measured. It was found that:—

- (1) There was no significant difference between the types of broiler tested in the number of pounds of feed consumed per pound of gain in body weight.
- (2) The differences between the weights of cockerels of the four types of broiler at ten weeks of age were significant. The order of superiority was—Progeny of White Plymouth Rock cocks and Newhampshire hens, progeny of White Plymouth Rock cocks and hens, progeny of Newhampshire cocks and hens, progeny of Newhampshire cocks and White Plymouth Rock hens. The superiority of the cockerel progeny of White Plymouth Rock cocks and Newhampshire hens was attributed to hybrid vigour; they averaged 3.21 lb. at ten weeks of age.

248. *Seasonal Production of Pangola Grass and its Stocking Rates with Cattle*—Towards the end of the year an experiment investigating the seasonal production of Pangola Grass and its carrying capacity at fixed stocking rates with cattle was initiated jointly with the Imperial College of Tropical Agriculture.

249. *Water uptake of Cattle*—In co-operation with the Imperial College of Tropical Agriculture, the uptake of water during the wet and dry seasons is being determined in the following :—

(1) A group of ten lactating Holstein-Zebu cattle.

(2) A group of ten dry Holstein-Zebu cattle.

(3) A group of ten growing Holstein-Zebu heifers before breeding age.

Water provided at pasture, in the milking shed, and that taken in through ingestion of fodder is being carefully measured.

#### FENCES, PASTURAGE, IRRIGATION, BUILDINGS, ETC.

250. Continued use was made of electric fencing to subdivide permanently fenced grazing paddocks. Extensive re-fencing is envisaged over the next five years.

251. Under pasturage, the emphasis was on establishing fields of Pangola Grass (*Digitaria decumbens*) for grazing purposes. The total area of this grass at the St. Joseph Farm is now 105 acres and 43 acres on the Tobago Farm. At the O'Meara Breeding Unit where the water buffalo herd is maintained, 24 acres of Pangola Grass and 12 of Toco Grass (*Ischacum hiliare*) were established and fenced. Paragraphs 161 to 165 concern pasturage at the Central Experiment Station.

252. A total of 117 acres (60 at the St. Joseph Farm and 57 at the Tobago Farm) of Elephant Grass (*Pennesetum purpureum*) and Pangola Grass have been brought under irrigation. This facility was of immense value during the prolonged dry season. A sprinkler system is used.

253. A new stores and feed mixing building, two deep litter houses, a Field Assistant's quarter, a Stockman's quarter, two safety bull pens, and a 1½ ton platform scale were erected at the St. Joseph Farm. At the Tobago Farm, two new deep litter houses were built and two existing rooms converted into an incubator room. A weighbridge is to be installed.

254. A new Ferguson tractor was bought for the St. Joseph Farm and a modern chaff cutter was installed at the Tobago Farm.

#### Plant Quarantine

255. Another "Mediterranean Fruit Fly" survey was carried out in Trinidad at the height of the fruiting season, again with negative results.

256. The main Plant Protection office was removed from the St. Vincent Wharf to the Baggage Room, Customs Headquarters.

#### PLANT PROTECTION WORK

257. The following summary provides details of the Plant Protection work carried out by the authorised port of entry Port-of-Spain and Scarborough (by sea) and Piarco and Crown Point (by air).

258. *Phytosanitary Certificates*—A total of 459 phytosanitary certificates was issued for the export of cut flowers, fruit, planting material, &c., under the Plant Protection Regulations (1953).

259. *Permits*—A total of 155 permits was issued for the importation of planting material, fruit, vegetables, &c., under the Plant Protection Regulations (1953).

260. "*Quantity*"\* of plants and plant products imported and inspected at *Port-of-Spain*.

Vegetables 406,763 ; Fruit 42,699 ; Miscellaneous Plant Material 5,866 ; Banana Suckers 115,721 ; Cotton 1,701 ; Broom Corn 451 ; Cotton Seed Meal 50 ; Seizures 1,701.

261. "*Quantity*"\* of plants and plant products imported and inspected at *Piarco*.

Vegetables 165 ; Fruit 117 ; Miscellaneous Plant Material 80 ; Seizures 85.

262. "*Quantity*"\* of plants and plant products imported and inspected at the *San Fernando Post Office*.

Vegetables 3 ; Fruit 2 ; Miscellaneous Plant Material 15.

263. *Seizures*—Material which was seized and destroyed under the Plant Protection Regulations (1953) included :—

*Port-of-Spain*—Apples, grapes, mangoes, oranges, corn, cacao pods, raw coffee, cut flowers, herbs, grass seeds, moss, sugarcane and miscellaneous plants growing in soil.

*Piarco*—Apples, avocado pears, bananas, figs, grapes, guavas, limes, mandarins, mangoes, melons, oranges, pineapples, plantains, plums, portugals, sapodillas, soursofs, tomatoes, cabbages, cassava, chives, cucumbers, onions, peppers, pigeon peas, cactus, cut flowers, herbs, lilies, roses, sugarcane and miscellaneous plants growing in soil.

### Revenue

264. The revenue collected by the various stations and divisions of the Department of Agriculture amounted to \$418,462.08. Details are given in Table XXVII.

### Publications

"Leaf Scald Disease in the West Indies", by J. A. Spence, B.Sc., Dip. Agric. sc., D.T.A., Plant Pathologist, Department of Agriculture.

The following appeared as a supplement of the Journal of the Agricultural Society of Trinidad and Tobago :—

"A Note on Soil Conservation in St. Vincent, British West Indies, by" K. D. Guyadeen, A.I.C.T.A., D.I.C.T.A., Agricultural Officer, Department of Agriculture, (57 : 1, 98-107).

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(\* Quantity means number of bags, crates, items, &c., which vary in weight from less than one pound, to two hundred pounds.)

## Conferences, Meetings, Tours, &c.

### CONFERENCES AND MEETINGS

The Department of Agriculture was represented by various officers at a number of conferences and meetings as shown hereunder.

The Fifth Meeting of the British Caribbean Advisory Council on Agriculture, Animal Health and Husbandry, Forestry and Fisheries, was held in Jamaica from 19th August to 24th August, 1957. It was attended by

DR. L. R. HUTSON, Acting Director of Agriculture.

MR. V. O. FERRER, Marketing Officer.

A Cocoa Conference was held in London on the 10th-12th September, 1957. This Colony was represented by Dr. B. G. Montserin, Deputy Director (Research).

A Seminar on Brucellosis sponsored by the World Health Organisation, was held in Peru from 29th September to 8th October, 1957. It was attended by Dr. L. V. Butcher, Veterinary Officer.

The twenty-fourth Meeting of the British West Indian Central Sugarcane Breeding Station was held in Barbados on the 14th and 15th November, 1957. Dr. L. R. Hutson, Acting Director of Agriculture represented this Colony.

The Annual Meeting of the British West Indian Sugarcane Investigation Committee, held in Barbados on the 16th November, 1957, was attended by Dr. L. R. Hutson, Acting Director of Agriculture, and Mr. J. A. Spence, Plant Pathologist.

Mr. I. Hosein, Agronomist (Fruit Crops) attended a conference in Virus Diseases of Citrus at the University of California from 18th November to 22nd November, 1957. After the conference he spent one week at that University and two weeks at the University of Florida studying the various Virus Diseases of Citrus.

### SCHOLARSHIPS, FELLOWSHIPS AND STUDY LEAVE

Mr. C. B. Brown, Soil Survey Officer, was granted a United Nations Scholarship (I.C.A.) to study Soil Genesis at Rutgers University for one year with effect from 17th January, 1957.

Mr. G. Stell, Entomologist, attended two short courses on Stored Products and Plant Quarantine during his vacation leave in the United Kingdom.

### OVERSEAS TOURS AND COURSES

Mr. E. R. Cumberbatch, Senior Agricultural Assistant, was selected as the official delegate of this Government to participate in the Banana Demonstration tour held in Jamaica from 1st July to 10th July, 1957.

Messrs. D. Davies and E. P. Alleyne, Agricultural Assistants, attended a course to study Soil Conservation in St. Vincent from 31st July to 14th August, 1957.



## ADVISERS TO OTHER COLONIES

Mr. J. Spence, Plant Pathologist, visited Martinique on a private undertaking in connection with Leaf Scald in sugarcane from 28th May to 3rd June, 1957.

Mr. J. Spence also paid an official visit to St. Lucia in connection with sugarcane Leaf Scald Disease from 3rd June to 6th June, 1957.

## Staff

Promotions, recruitments, secondments, retirements and resignations from 1st January to 31st December, 1957 are outlined hereunder.

| <i>Name</i>         |     | <i>Post</i>                                                                            | <i>Effective Date</i>      |
|---------------------|-----|----------------------------------------------------------------------------------------|----------------------------|
| <i>Promotions</i>   |     |                                                                                        |                            |
| P. J. DOMINIQUE     | ... | Agricultural Officer ...                                                               | 17. 1.57                   |
| S. REDMAN...        | ... | Senior Agricultural Assistant ...                                                      | 28. 1.57                   |
| S. BHARATH          | ... | Agricultural Officer ...                                                               | 18.1.57                    |
| <i>Recruitments</i> |     |                                                                                        |                            |
| L. GOBERDHAN        | ... | Agricultural Assistant ...                                                             | 1. 3.57                    |
| DR. D. KANHAI       | ... | Veterinary Officer ...                                                                 | 30. 9.57                   |
| <i>Secondments</i>  |     |                                                                                        |                            |
| T. O. PHILLIPS      | ... | Senior Agricultural Assistant<br>to Agricultural Society of<br>Trinidad and Tobago ... | 18. 2.57<br>(for one year) |
| H. ALEXANDER        | ... | Field Assistant to Marketing<br>Board, Tobago ...                                      | 1. 6.57<br>(for 18 months) |
| E. E. SEIGNORET     | ... | Agricultural Officer to<br>Ministry of Agriculture,<br>Lands and Fisheries ...         | 1.12.57                    |
| <i>Retirements</i>  |     |                                                                                        |                            |
| P. O. HOSTEN        | ... | Agricultural Officer ...                                                               | 17. 1.57                   |
| C. H. B. WILLIAMS   | ... | Director of Agriculture ...                                                            | 28. 1.57                   |
| <i>Resignations</i> |     |                                                                                        |                            |
| I. E. TELFER        | ... | Senior Agricultural Assistant ...                                                      | 27. 1.57                   |
| DR. P. LOUISY       | ... | Veterinary Officer ...                                                                 | 12. 9.57                   |
| C. C. APPLEWHITE    | ... | Agricultural Assistant ...                                                             | 14.12.57                   |

# AGRICULTURAL LEGISLATION

| Agricultural Credit Societies                                                                         | Date               | References                                                                                                                              | Remarks                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Gazette</i> Notice No. 247—Agricultural Rent Board, Tobago                                         | 2nd February, 1957 | Section 3 (2) of the Rents of Small Agricultural Holdings Ordinance, Ch. 23, No. 20                                                     | Appointment of Mr. G. H. Collymore as Chairman of the Agricultural Rent Board                                                                                                                                                                                                                                                                          |
| <i>Gazette</i> Notice No. 1173—Agricultural Credit Bank Board                                         | 2nd July, 1957     | Section 5 of the Agricultural Credit Bank Ordinance, Ch. 23, No. 5                                                                      | Appointment of Sir Harold Robinson, Mr. Guy O'Reilly, Q.C., and Mr. Joseph Agard as Members of the Board of Management                                                                                                                                                                                                                                 |
| Government Notice No. 148 of 1957—Small Agricultural Holdings Order, 1952-53 (Revocation) Order, 1957 | 30th October, 1957 | Section 11 (1) of the Rent of Small Agricultural Holdings Ordinance                                                                     | Order made by the Governor in Council under Section 11 (1) of the Rents of Small Holdings Ordinance                                                                                                                                                                                                                                                    |
| <b>Cocoa</b><br><i>Gazette</i> Notice No. 128—Cocoa Board—Appointment of Members                      | 14th January, 1957 | Section 4 of Cocoa Industry Ordinance, Ch. 23, No. 16                                                                                   | Appointment of Members:—The Director of Agriculture—Chairman, Accountant General—Vice-Chairman, E. V. Wharton, Esq., C.B.E., James Forbes, Esq., Professor C. Y. Shephard, C.B.E., J. A. McDonald, Esq., Carl de Verteuil, Esq., Sir Harold Robinson, D. B. Murray, Esq., J. C. Muir, Esq., C.M.G., O.B.E., Egbert Taylor, Esq., Sooklal Brekhan, Esq. |
| <i>Gazette</i> Notice No. 1335—Cocoa Pool, 1956-57—Fixing of Period                                   | 22nd August, 1957  | Exportation of Cocoa Ordinance, Ch. 23, No. 21, as amended by Section 2 of Exportation of Cocoa (Amendment) Ordinance No. 24 of 1954    | Cocoa Pool, 1st September, 1956-31st August, 1957, as the period during which the net proceeds of cocoa may be paid to Accountant General                                                                                                                                                                                                              |
| <i>Gazette</i> Notice No. 1336—Cocoa Pool                                                             | 22nd August, 1957  | Exportation of Cocoa Ordinance, Ch. 23, No. 21 as amended by Section (2) of the Exportation of Cocoa Amendment Ordinance No. 24 of 1954 | Distribution for the period 1st September, 1956-31st August, 1957                                                                                                                                                                                                                                                                                      |

AGRICULTURAL LEGISLATION—CONTINUED

| Gazette Notice No. 56—Sugar Industry Price Stabilization Fund Committee                                                  | Date                   | References                                                                                                                                                   | Remarks                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p align="center"><b>Sugar</b></p> <p><i>Gazette</i> Notice No. 56—Sugar Industry Price Stabilization Fund Committee</p> | 2nd January, 1957 ...  | Section 8 (1) of the Sugar Industry Special Funds Ordinance No. 14                                                                                           | Appointment of the Director of Agriculture—Chairman, Accountant General, Representing the Sugar Manufacturers' Association of Trinidad Inc.—E. Johnson, Esq., J. L. McCarthy, Esq., P. E. R. Bovell, Esq., Representing Cane Farmers—Deochan Panchain, Esq., Ackbar Enayat Ali, Esq. |
| <p><i>Gazette</i> Notice No. 57—Sugar Industry Price Rehabilitation Fund Committee</p>                                   | 2nd January, 1957 ...  | Section 8 (2) of the Sugar Industry Special Fund Ordinance, Ch. 23, No. 12                                                                                   | Appointment of Director of Agriculture—Chairman, Accountant General, I. Johnson, Esq., J. L. McCarthy, Esq., P. E. R. Bovell, Esq., H. Hopwood Esq., C. W. Howard, Esq.                                                                                                              |
| <p><i>Gazette</i> Notice No. 58—Interim Price for Farmers' Canes, 1957</p>                                               | 10th January, 1957 ... | Section 9(1)(a) of the Production of Cane Ordinance, Ch. 23, No. 12                                                                                          | Fixing of Price                                                                                                                                                                                                                                                                      |
| <p><i>Gazette</i> Notice No. 199—Cane Farming Arbitration Board</p>                                                      | 22nd January, 1957 ... | Section 11 (2) of the Production of Cane Ordinance, Ch. 23, No. 12                                                                                           | Appointment of Mr. C. V. Archer—Chairman                                                                                                                                                                                                                                             |
| <p><i>Gazette</i> Notice No. 606—Cane Farming Arbitration Board</p>                                                      | 30th March, 1957 ...   | Section 11 (2) of the Production of Cane Ordinance, Ch. 23, No. 12                                                                                           | Nomination of Mr. Ramcharitar Makhan                                                                                                                                                                                                                                                 |
| <p><i>Gazette</i> Notice No. 1235—Sugar Industry Labour Welfare Committee</p>                                            | 30th July, 1957        | Section 8 (3) and the Regulations made under Section 9 (2) of the Sugar Industry Special Funds Ordinance, Ch. 23, No. 14                                     | Appointment of Members:—Dr. R. M. F. Charles, G. H. McEachrane, Esq., A. R. Geoffroy, Esq., Dickson Emery, Esq., Ramanan Ramesar, Esq., Boodram Chinabar, Esq., D. Andrews, Esq., C. W. Howard, Esq., A. D. Mitchell, Esq.                                                           |
| <p><i>Gazette</i> Notice No. 1236—Sugar Industry Labour Welfare Committee</p>                                            | 30th July, 1957 ...    | Sugar Industry Labour Welfare Committee (Amendment) Regulations, 1956 made under Section 9 (2) of the Sugar Industry Special Funds Ordinance, Ch. 23, No. 14 | Appointment of Mr. V. A. Richardson as Chairman                                                                                                                                                                                                                                      |

# AGRICULTURAL LEGISLATION—CONTINUED

|                                                                                          | Date                 | References                                                                     | Remarks                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sugar—Continued</b>                                                                   |                      |                                                                                |                                                                                                                                                                                                        |
| <i>Gazette</i> Notice No. 1467—Sugar Industry Price Stabilisation Fund Committee         | 11th September, 1957 | Sugar Industry (Price Stabilisation) Regulations, 1951–53                      | Appointment of Mr. Richard Spink as Member                                                                                                                                                             |
| <i>Gazette</i> Notice No. 1468—Sugar Industry Rehabilitation Fund Committee              | 11th September, 1957 | Sugar Industry (Rehabilitation Committee) Regulations                          | Appointment of Mr. Richard Spink as Member                                                                                                                                                             |
| <i>Gazette</i> Notice No. 1582—Sugar Industry Labour Welfare Committee                   | 4th October, 1957    | Section 9 (2)(c) of the Sugar Industry Special Funds Ordinance, Ch. 23. No. 14 | Appointment of Mr. I. W. Burke as Member                                                                                                                                                               |
| <b>Animals (Disease and Importation)</b>                                                 |                      |                                                                                |                                                                                                                                                                                                        |
| Government Notice No. 88—The Animals (Importation) Control (Amendment) Regulations, 1957 | 15th May, 1957       | Section 15 of the Animals (Disease and Importation) Ordinance, 1954            | Regulations made by the Governor in Council under Section 15 of the Animals (Disease and Importation) Ordinance, 1954, to be cited as the Animals (Importation) Control (Amendment) Regulations, 1957  |
| Government Notice No. 96—The Animals (Importation) Control (Amendment) Regulations, 1957 | 31st May, 1957       | Section 15 of the Animals (Disease and Importation) Ordinance, 1954            | Regulations made by the Governor in Council, under Section 15 of the Animals (Disease and Importation) Ordinance, 1954, to be cited as the Animals (Importation) Control (Amendment) Regulations, 1957 |



Table I—Annual Rainfall, Trinidad and Tobago

| Station                            |     |     |     |     | Total<br>1956, inches | Mean 25 Years<br>inches |
|------------------------------------|-----|-----|-----|-----|-----------------------|-------------------------|
| <i>North Trinidad :</i>            |     |     |     |     |                       |                         |
| River Estate, Diego Martin         | ... | ... | ... | ... | 65.33                 | 75.00                   |
| St. Clair, Port-of-Spain           | ... | ... | ... | ... | 48.58                 | 65.55                   |
| La Pastora, Santa Cruz             | ... | ... | ... | ... | 68.38                 | 83.91                   |
| I.C.T.A., St. Augustine            | ... | ... | ... | ... | 47.51                 | 67.02                   |
| Meteorological Station, Piarco     | ... | ... | ... | ... | 49.65                 | 68.67                   |
| Frederick Estate, Caroni           | ... | ... | ... | ... | 49.55                 | 76.49                   |
| Torreccilla Estate, Arima          | ... | ... | ... | ... | 67.26                 | 89.90                   |
| Works and Hydraulics, Toco         | ... | ... | ... | ... | 50.11                 | 69.71                   |
| Hollis Reservoir, Valencia         | ... | ... | ... | ... | 104.38                | 120.02                  |
| Sans Souci Estate, Sangre Grande   | ... | ... | ... | ... | 90.92                 | 111.97                  |
| <i>Central Trinidad :</i>          |     |     |     |     |                       |                         |
| Waterloo Estate                    | ... | ... | ... | ... | 52.00                 | 65.03                   |
| Todds Road Estate                  | ... | ... | ... | ... | 51.12                 | 71.18                   |
| Tamana Teak Plantation...          | ... | ... | ... | ... | 97.65                 | 113.69                  |
| McBean Estate, Couva               | ... | ... | ... | ... | 66.59                 | 65.27                   |
| Forres Park Estate, Claxton Bay    | ... | ... | ... | ... | 60.28                 | 62.70                   |
| New Lands Estate, Biche            | ... | ... | ... | ... | 92.07                 | 106.38                  |
| Marper Farm, Manzanilla            | ... | ... | ... | ... | 93.79                 | 102.82                  |
| Brasso-Tamana Road                 | ... | ... | ... | ... | 81.67                 | 101.63                  |
| Cocal Estate, Nariva               | ... | ... | ... | ... | 74.42                 | *—                      |
| Navet C.M. School                  | ... | ... | ... | ... | 75.15                 | *—                      |
| <i>South Trinidad :</i>            |     |     |     |     |                       |                         |
| Brothers Estate, Williamsville     | ... | ... | ... | ... | 55.70                 | 81.24                   |
| Usine Ste. Madeleine, San Fernando | ... | ... | ... | ... | 52.22                 | 67.93                   |
| Perseverance Estate, Cedros        | ... | ... | ... | ... | 42.29                 | 59.07                   |
| Poole Syndicate, Rio Claro         | ... | ... | ... | ... | 87.27                 | 107.30                  |
| Point Fortin Filtration Plant      | ... | ... | ... | ... | 67.31                 | 79.35                   |
| T.L.L., Barrackpore                | ... | ... | ... | ... | 56.70                 | 71.66                   |
| Mayaro Police Station, Mayaro      | ... | ... | ... | ... | 50.24                 | 79.66                   |
| Moruga Police Station, Moruga      | ... | ... | ... | ... | 55.05                 | 71.26                   |
| T.L.L., Guayaguayare               | ... | ... | ... | ... | 71.70                 | 89.15                   |
| Siparia Old Road, Fyzabad          | ... | ... | ... | ... | 45.38                 | 68.29                   |
| <i>Tobago :</i>                    |     |     |     |     |                       |                         |
| Botanic Gardens                    | ... | ... | ... | ... | 51.85                 | 76.13                   |
| Government Farm                    | ... | ... | ... | ... | 57.29                 | 68.35                   |
| Hermitage Estate                   | ... | ... | ... | ... | 77.09                 | 93.69                   |
| Friendship Estate                  | ... | ... | ... | ... | 47.08                 | *—                      |
| Green Hill Estate                  | ... | ... | ... | ... | 80.38                 | *—                      |
| Kendal Estate                      | ... | ... | ... | ... | 56.41                 | 119.94                  |

NOTE—\*New Stations

Table II—Mean Monthly Rainfall, Trinidad and Tobago

| Month     |     |     |     |     |     | 1957, Inches | 26-Year<br>Mean, Inches |
|-----------|-----|-----|-----|-----|-----|--------------|-------------------------|
| January   | ... | ... | ... | ... | ... | 4.0          | 4.7                     |
| February  | ... | ... | ... | ... | ... | 1.8          | 3.2                     |
| March     | ... | ... | ... | ... | ... | .4           | 2.4                     |
| April     | ... | ... | ... | ... | ... | 4.0          | 2.9                     |
| May       | ... | ... | ... | ... | ... | 4.0          | 6.0                     |
| June      | ... | ... | ... | ... | ... | 6.5          | 10.3                    |
| July      | ... | ... | ... | ... | ... | 8.6          | 10.1                    |
| August    | ... | ... | ... | ... | ... | 7.8          | 10.5                    |
| September | ... | ... | ... | ... | ... | 5.1          | 7.9                     |
| October   | ... | ... | ... | ... | ... | 5.2          | 7.8                     |
| November  | ... | ... | ... | ... | ... | 9.2          | 9.5                     |
| December  | ... | ... | ... | ... | ... | 8.7          | 9.0                     |
|           |     |     |     |     |     | 65.3         | 84.3                    |

Table III—Output of Fresh Fruit and Canned Products—Co-operative Citrus Growers' Association

|     |                                            |     |         |  | Grapefruit | Orange | Blended |
|-----|--------------------------------------------|-----|---------|--|------------|--------|---------|
| (a) | Juice produced in 1957—Cartons A2 Cans     | ... | 422,900 |  | 126,141    | 3,837  |         |
| (b) | Juice sold locally in 1957—Cartons A2 Cans | ... | 94,975  |  | 26,446     | 4,781  |         |
| (c) | Juice exported in 1957—Cartons A2 Cans     | ... | 361,198 |  | 119,885    | 10,564 |         |
| (d) | Fresh Fruit exported in 1957—Crates        | ... | 117,237 |  | 6,851      | —      |         |

Table IV—Imports of Specified Commodities, 1957

|                                                                       | Unit | CARIBBEAN  |           | NON-CARIBBEAN |           |
|-----------------------------------------------------------------------|------|------------|-----------|---------------|-----------|
|                                                                       |      | Quantity   | Value     | Quantity      | Value     |
| Live animals chiefly for food ... ..                                  | no.  | 14,415     | \$ 77,448 | 78,082        | \$ 32,947 |
| Meat, fresh, chilled or frozen ... ..                                 | lb.  | 86,521     | 50,084    | 10,485,081    | 4,943,696 |
| Meat dried, salted or smoked not canned                               | lb.  | 988        | 894       | 5,025,539     | 2,231,466 |
| Meat canned and meat preparations<br>canned and not canned ... ..     | lb.  | 180        | 110       | 2,470,706     | 1,717,057 |
| Milk and cream, fresh ... ..                                          | lb.  | —          | —         | 34,519        | 10,551    |
| Milk and cream evaporated, condensed<br>or dried ... ..               | lb.  | 16         | 53        | 21,370,560    | 7,959,022 |
| Butter ... ..                                                         | lb.  | 1,620      | 1,466     | 2,395,936     | 1,617,434 |
| Eggs in shell or other ... ..                                         | —    | —          | —         | 520,381       | 335,159   |
| Rice ... ..                                                           | lb.  | 32,106,948 | 3,629,835 | 27,236,602    | 2,943,831 |
| Maize (corn) unmilled ... ..                                          | lb.  | 4,672      | 261       | 9,156,097     | 552,094   |
| Meal and flour of maize and of cereals,<br>n.e.s. (negligible) ... .. | lb.  | 232        | 24        | 1,587,672     | 138,050   |
| Fresh and dry vegetables, roots and<br>tubers ... ..                  | lb.  | 7,954,743  | 291,315   | 13,040,091    | 4,109,569 |
| Fruits and nuts, fresh ... ..                                         | lb.  | 380,418    | 32,681    | 1,970,628     | 658,012   |
| Fish, fresh, chilled or frozen ... ..                                 | lb.  | 11,876     | 6,642     | 85,463        | 42,667    |
| Cod Fish (salted fish) ... ..                                         | lb.  | —          | —         | 5,251,469     | 1,756,832 |
| Other fish (salted, dried or smoked) ...                              | lb.  | 65,883     | 36,260    | 1,191,718     | 412,067   |
| Fish, canned ... ..                                                   | lb.  | 28         | 11        | 1,387,729     | 959,743   |

Table V—Agricultural Exports, Trinidad and Tobago, 1957

|                                              |     |     |     | Unit | Quantity   | Value      | Value      |
|----------------------------------------------|-----|-----|-----|------|------------|------------|------------|
|                                              |     |     |     |      |            | \$         | \$         |
| <i>Sugar and by-products</i>                 |     |     |     |      |            |            |            |
| Sugar (unrefined)                            | ... | ... | ... | cwt. | 2,839,518  | 29,510,677 |            |
| Sugar (refined)                              | ... | ... | ... | lb.  | 494,200    | 42,811     |            |
| Molasses, inedible (raw)                     | ... | ... | ... | cwt. | 1,074,582  | 1,134,115  | 30,687,603 |
| <i>Cacao</i>                                 |     |     |     |      |            |            |            |
| Cacao beans                                  | ... | ... | ... | cwt. | 142,372    | 8,474,572  |            |
| Cacao butter                                 | ... | ... | ... | lb.  | 124,153    | 124,644    |            |
| Cacao powder                                 | ... | ... | ... | lb.  | 19,937     | 12,766     | 8,611,982  |
| <i>Citrus</i>                                |     |     |     |      |            |            |            |
| Lime juice (raw)                             | ... | ... | ... | lb.  | 118,415    | 22,810     |            |
| Lime juice (concentrated)                    | ... | ... | ... | lb.  | 1,261      | 721        |            |
| Lime juice (clear, clarified, filtered)      | ... | ... | ... | lb.  | 714,836    | 69,060     |            |
| Limes, fresh                                 | ... | ... | ... | lb.  | 6,611      | 1,251      |            |
| Grapefruit, fresh                            | ... | ... | ... | lb.  | 10,117,141 | 676,215    |            |
| Oranges, tangerines and mandarines           | ... | ... | ... | lb.  | 3,063,755  | 242,137    |            |
| Canned grapefruit juice                      | ... | ... | ... | lb.  | 12,713,774 | 1,525,739  |            |
| Canned orange juice                          | ... | ... | ... | lb.  | 4,296,343  | 676,766    |            |
| Canned orange and grapefruit juice mixed     | ... | ... | ... | lb.  | 369,390    | 52,157     | 3,266,856  |
| <i>Tonca Beans</i>                           |     |     |     |      |            |            |            |
| Tonca beans                                  | ... | ... | ... | lb.  | 29,352     | 67,178     | 67,178     |
| <i>Rubber</i>                                |     |     |     |      |            |            |            |
| Rubber, raw                                  | ... | ... | ... | lb.  | 145,600    | 68,979     | 68,979     |
| <i>Coffee</i>                                |     |     |     |      |            |            |            |
| Coffee, raw                                  | ... | ... | ... | cwt. | 35,701     | 2,151,036  | 2,151,036  |
| <i>Coconuts and Derivatives</i>              |     |     |     |      |            |            |            |
| Coconut oil (unrefined)                      | ... | ... | ... | lb.  | 1,356,315  | 327,725    |            |
| Coir fibre                                   | ... | ... | ... | lb.  | 300,125    | 27,772     |            |
| Copra                                        | ... | ... | ... | cwt. | 7,500      | 112,500    | 467,997    |
| <i>Vegetables</i>                            |     |     |     |      |            |            |            |
| Vegetables, fresh and dry                    | ... | ... | ... | lb.  | 1,298,945  | 269,181    |            |
| Peas, beans, lentils, &c.                    | ... | ... | ... | lb.  | 356        | 85         | 269,266    |
| <i>Fresh Fruit, Other Sorts</i>              |     |     |     |      |            |            |            |
| Fresh fruit, other sorts                     | ... | ... | ... | lb.  | 610,640    | 144,665    |            |
| Bananas                                      | ... | ... | ... | lb.  | 9,985,170  | 553,331    | 697,996    |
| <i>Livestock and Hides</i>                   |     |     |     |      |            |            |            |
| Live animals, chiefly for food               | ... | ... | ... | no.  | 34,065     | 20,108     |            |
| Live animals, other than for food            | ... | ... | ... | no.  | 58         | 14,921     |            |
| Hides and skins (except fur skins) undressed | ... | ... | ... | —    | —          | —          | 35,029     |
| <i>Honey</i>                                 |     |     |     |      |            |            |            |
| Natural honey                                | ... | ... | ... | lb.  | 23,608     | 5,357      | 5,357      |
| <i>Milk</i>                                  |     |     |     |      |            |            |            |
| Milk and cream, fresh                        | ... | ... | ... | lb.  | 75,473     | 14,431     | 14,431     |
| <i>Spices</i>                                |     |     |     |      |            |            |            |
| Nutmeg                                       | ... | ... | ... | lb.  | 81,014     | 171,607    |            |
| Mace                                         | ... | ... | ... | lb.  | 3,770      | 16,378     |            |
| Pepper and pimento                           | ... | ... | ... | lb.  | 640        | 173        |            |
| Ginger and other spices                      | ... | ... | ... | lb.  | 16,771     | 10,644     | 198,802    |
| <b>TOTAL</b>                                 |     |     |     |      |            |            | 46,542,512 |



**Table VI—Exports of Manufactured Agricultural Products,  
Trinidad and Tobago, 1957**

|                                               | Unit   | Quantity  | Value     | Value              |
|-----------------------------------------------|--------|-----------|-----------|--------------------|
| <i>Sugar and By-Products</i>                  |        |           | \$        | \$                 |
| Rum ... ..                                    | 1 gal. | 417,055   | 1,663,900 |                    |
| Syrup and molasses...                         | lb.    | —         | 15        | 1,663,915          |
| <i>Citrus</i>                                 |        |           |           |                    |
| Lime oil (distilled) ... ..                   | lb.    | 6,537     | 63,762    | 63,762             |
| <i>Coffee</i>                                 |        |           |           |                    |
| Coffee (prepared) ... ..                      | lb.    | 73,313    | 55,288    | 55,288             |
| <i>Coconuts and Derivatives</i>               |        |           |           |                    |
| Coconut oil (refined) ... ..                  | lb.    | 3,067,658 | 846,770   |                    |
| Lard substitute ... ..                        | lb.    | 192,909   | 72,244    | 919,014            |
| <i>Vegetable and Animal Products</i>          |        |           |           |                    |
| Margarine (vegetable, animal or mixed) ... .. | lb.    | 632,329   | 260,780   |                    |
| Other sorts of lard substitute                | lb.    | 5,472     | 2,077     | 262,857            |
| <i>Soap</i>                                   |        |           |           |                    |
| Acid, fatty and solid oils including—         |        |           |           |                    |
| Stock soap ... ..                             | lb.    | —         | —         |                    |
| Hard soap ... ..                              | lb.    | 88,485    | 16,727    | 16,727             |
| <i>Bitters</i>                                |        |           |           |                    |
| Bitters ... ..                                | 1 gal. | 72,429    | 892,651   | 892,651            |
| <i>Jam, Marmalade and Fruit Jellies</i>       |        |           |           |                    |
| Jam, marmalade and fruit jellies              | lb.    | —         | —         | —                  |
| <i>Wine</i>                                   |        |           |           |                    |
| In bottle ... ..                              | 1 gal. | 2,055     | 4,731     |                    |
| In wood ... ..                                | 1 gal. | 1,076     | 1,844     | 6,575              |
| <b>TOTAL</b> ... ..                           |        |           |           | <b>\$3,880,789</b> |

**Table VII—Trinidad Crop Statistics—Sugar**

|                                         | 1957<br>Tons       | 1956<br>Tons       |
|-----------------------------------------|--------------------|--------------------|
| Estates' canes ground ... ..            | 1,102,281 (70.91%) | 1,062,313 (65.13%) |
| Farmers' canes ground ... ..            | 452,246 (29.09%)   | 568,790 (34.87%)   |
| Total canes ground ... ..               | 1,554,527          | 1,631,103          |
| Sugar output ... ..                     | 167,805            | 160,230            |
| Tons cane per ton sugar ... ..          | 9.26               | 10.18              |
| Estates acreage reaped ... ..           | 43,343 acres       | 40,918 acres       |
| Estates average cane yield per acre ... | 26.03 tons         | 25.96 tons         |

**Table VIII—Exports and Value of Raw Cacao, Trinidad and Tobago**

| Year        | Exports    | Value      |
|-------------|------------|------------|
|             | lb.        | \$         |
| 1952 ... .. | 14,087,360 | 8,237,141  |
| 1953 ... .. | 21,684,496 | 11,720,925 |
| 1954 ... .. | 17,640,784 | 15,047,820 |
| 1955 ... .. | 16,459,744 | 11,773,390 |
| 1956 ... .. | 21,836,752 | 10,485,241 |
| 1957 ... .. | 15,945,752 | 8,474,572  |

**Table IX—Position with regard to Tenants on Land Settlements  
administered by the Extension Division**

| Agreement                                                                    | 1956 |                     | 1957 |                     | 1956-57      |                              |
|------------------------------------------------------------------------------|------|---------------------|------|---------------------|--------------|------------------------------|
|                                                                              | No.  | Acreage<br>A. R. P. | No.  | Acreage<br>A. R. P. | Total<br>No. | Total<br>Acreage<br>A. R. P. |
| <i>Recommended and executed</i><br>Probationary Agreements ...               | 3    | 6 0 34              | 15   | 30 0 38             | 18           | 36 1 32                      |
| 25-year leases ... ..                                                        | 1    | 1 0 00              | —    | —                   | 1            | 1 0 00                       |
| <i>Recommended and awaiting<br/>execution</i><br>Probationary Agreements ... | 23   | 46 3 00             | 72   | 144 0 01            | 95           | 190 3 01                     |
| 25-year leases ... ..                                                        | 22   | 86 1 17             | 7    | 14 3 04             | 29           | 101 0 21                     |
| TOTAL ... ..                                                                 | 49   | 140 1 11            | 94   | 189 0 03            | 143          | 329 1 14                     |

**Table X—Position with regard to Tenants on Land Settlements which are still being developed**

| Agreement                                 | 1956 |          | 1957 |          | 1956-57   |               |
|-------------------------------------------|------|----------|------|----------|-----------|---------------|
|                                           | No.  | Acreage  | No.  | Acreage  | Total No. | Total Acreage |
|                                           |      | A. R. P. |      | A. R. P. |           | A. R. P.      |
| <i>Recommended and Executed</i>           |      |          |      |          |           |               |
| Monthly tenancy agreements                | 62   | 354 0 03 | 48   | 207 3 04 | 110       | 561 3 07      |
| 25-year leases ... ..                     | 1    | 9 1 27   | —    | —        | 1         | 9 1 27        |
| <i>Recommended and awaiting execution</i> |      |          |      |          |           |               |
| Monthly tenancy agreements                | 11   | 28 1 28  | 53   | 368 3 15 | 64        | 397 1 03      |
| 25-year leases ... ..                     | —    | —        | 5    | 11 2 16  | 5         | 11 2 16       |
| TOTAL ... ..                              | 74   | 391 3 18 | 106  | 588 0 35 | 180       | 980 0 13      |

**Table XI—Crown lands recommended for Probationary Agreements and 25-year Leases**

| Agreement                                 | 1950-56 |            | 1957 |          | 1950-57   |               |
|-------------------------------------------|---------|------------|------|----------|-----------|---------------|
|                                           | No.     | Acreage    | No.  | Acreage  | Total No. | Total Acreage |
|                                           |         | A. R. P.   |      | A. R. P. |           | A. R. P.      |
| <i>Recommended and Executed</i>           |         |            |      |          |           |               |
| Probationary agreements ...               | 314     | 2,860 0 04 | 42   | 287 3 25 | 356       | 3,147 3 29    |
| 25-year leases ... ..                     | 43      | 948 1 34   | 3    | 25 2 19  | 46        | 974 0 13      |
| <i>Recommended and awaiting execution</i> |         |            |      |          |           |               |
| Probationary agreements ...               | 94      | 905 3 09   | 75   | 488 2 25 | 169       | 1,394 1 34    |
| 25-year leases ... ..                     | 30      | 361 1 08   | 15   | 94 3 22  | 45        | 456 0 30      |
| TOTAL ... ..                              | 481     | 5,075 2 15 | 135  | 897 0 11 | 616       | 5,972 2 26    |

**Table XII—Total Distribution of Vegetable and Ornamental Seedlings for 1953-1957**

|                                  | 1953   | 1954   | 1955   | 1956   | 1957   |
|----------------------------------|--------|--------|--------|--------|--------|
| Vegetable seedlings (boxes) ...  | 7,971  | 7,614  | 9,808  | 9,094  | 7,923  |
| Ornamental seedlings (boxes) ... | 5,998  | 6,868  | 8,783  | 9,328  | 11,596 |
|                                  | 13,969 | 14,482 | 18,591 | 18,422 | 19,519 |

Table XIII—Sugar cane varieties from 1951–1957—Percentage of total estate acreage reaped

| Variety         | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 |
|-----------------|------|------|------|------|------|------|------|
| B. 3337 ... ..  | 36.9 | 38.3 | 36.1 | 34.0 | 31.5 | 28.4 | 29.4 |
| B. 37172 ... .. | 11.3 | 12.1 | 20.5 | 27.7 | 30.8 | 28.2 | 25.9 |
| B. 37161 ... .. | 18.8 | 21.1 | 21.2 | 20.7 | 20.6 | 23.0 | 23.7 |
| B. 34104 ... .. | 27.2 | 22.7 | 16.9 | 12.4 | 6.8  | 4.4  | 2.9  |
| B. 41227 ... .. | 0.5  | 0.8  | 0.6  | 0.7  | 3.6  | 8.7  | 11.3 |
| B. 4362 ... ..  | —    | 0.1  | 0.9  | 1.2  | 2.7  | 3.1  | 2.5  |
| Others ... ..   | 5.3  | 4.9  | 3.8  | 3.3  | 6.0  | 4.2  | 4.3  |

Table XIV—Sugar cane varieties—Percentage of Plant cane acreage reaped (Sugar Estates only) 1957

| Variety         | Percentage |
|-----------------|------------|
| B. 37161 ... .. | 26.58      |
| B. 37172 ... .. | 26.33      |
| B. 41227 ... .. | 25.05      |
| B. 3337 ... ..  | 15.96      |
| B. 4362 ... ..  | 0.80       |
| B. 34104 ... .. | —          |
| Others ... ..   | 5.28       |
| TOTAL ... ..    | 100.00     |

Table XV—Summary of notifiable Livestock diseases occurring in the Colony

| Disease                                   | No.            |
|-------------------------------------------|----------------|
| Johne's ... ..                            | 1 case         |
| Newcastle ... ..                          | 3 outbreaks    |
| Ulcerative Lymphangitis ... ..            | 1 case         |
| Rabies (Paralytic)—Bat transmitted ... .. | 3 cases        |
| Tuberculosis—                             |                |
| Number of cattle tested ... ..            | 2,236          |
| Number of water buffalo tested ... ..     | 0              |
| Number of goats tested ... ..             | 17             |
|                                           | 0.63% reactors |
|                                           | —              |
|                                           | 23.5% reactors |

Table XVI—Vaccinations carried out and confirmed cases of Paralytic Rabies (Bat Transmitted)—1955–1957

| Year        | CLASS OF LIVESTOCK |           |               |                 | Total  | Confirmed cases |
|-------------|--------------------|-----------|---------------|-----------------|--------|-----------------|
|             | Cattle             | Horsekind | Water Buffalo | Sheep and Goats |        |                 |
| 1955 ... .. | 7,441              | 1,055     | 344           | 940             | 9,780  | 22              |
| 1956 ... .. | 20,439             | 2,421     | 807           | 1,084           | 24,751 | 3               |
| 1957 ... .. | 22,028             | 2,858     | 985           | 50              | 25,921 | 3               |



Table XVII—Numbers, Classes and Percentages of Reactors to Tuberculin Tests, 1955-1957

| Class of Livestock |     |     |     | 1955  |            | 1956  |            | 1957  |            |
|--------------------|-----|-----|-----|-------|------------|-------|------------|-------|------------|
|                    |     |     |     | No.   | % Reactors | No.   | % Reactors | No.   | % Reactors |
| Cattle             | ... | ... | ... | 3,291 | 0.4        | 4,067 | 0.51       | 2,236 | 0.63       |
| Water Buffalo      | ... | ... | ... | 170   | 3.5        | 77    | 7.8        | —     | —          |
| Goats              | ... | ... | ... | 57    | —          | —     | —          | 17    | 23.5       |

Table XVIII—Total Services by selected Sires, 1957

| Class of Sire        |     |     |     | No. | TOTAL SERVICES |       |
|----------------------|-----|-----|-----|-----|----------------|-------|
|                      |     |     |     |     | 1956           | 1957  |
| Stallion—Light Draft | ... | ... | ... | 1   | 11             | 1     |
| Jacks                | ... | ... | ... | 15  | 225            | 152   |
| Bulls*               | ... | ... | ... | 26† | 1,452          | 885   |
| Water Buffalo        | ... | ... | ... | 2   | 8              | 16    |
| Boars                | ... | ... | ... | 31  | 1,181          | 1,114 |
| Bucks                | ... | ... | ... | 34  | 1,416          | 1,467 |
| Rams                 | ... | ... | ... | 2   | 92             | 60    |

\*Exclusive of Artificial Inseminations

†The number of bulls was reduced by seven (7) in 1957

Table XIX—Sales of Breeding Stock from the St. Joseph and Tobago Stock Farms and the Central Experiment Station

| Class of Sale       |     |     |     | Male | Female | Total  |
|---------------------|-----|-----|-----|------|--------|--------|
| Cattle              | ... | ... | ... | 63   | 61     | 124    |
| Goats               | ... | ... | ... | 14   | 14     | 28     |
| Sheep               | ... | ... | ... | 3    | 16     | 19     |
| Pigs                | ... | ... | ... | 169  | 187    | 356    |
| Donkeys             | ... | ... | ... | 1    | —      | 1      |
| Poultry—Chicks, &c. | ... | ... | ... | —    | —      | 15,964 |
| Hatching eggs       | ... | ... | ... | —    | —      | 446    |

Table XX—Sales of Breeding Stock from the remainder of the Department

| Class of Sale       |     |     |     | Male | Female | Total |
|---------------------|-----|-----|-----|------|--------|-------|
| Cattle              | ... | ... | ... | 1    | 7      | 8     |
| Goats               | ... | ... | ... | —    | 4      | 4     |
| Sheep               | ... | ... | ... | —    | 11     | 11    |
| Pigs                | ... | ... | ... | —    | —      | 429   |
| Donkeys             | ... | ... | ... | —    | —      | —     |
| Poultry—Chicks, &c. | ... | ... | ... | —    | —      | 419   |
| Hatching eggs       | ... | ... | ... | —    | —      | 563   |

Table XXI—Comparative Total Livestock strengths on the two Stock Farms and the Central Experiment Station, 1955-1957

| Class         |     |     |     | 1955  | 1956  | 1957  | Increase | Decrease |
|---------------|-----|-----|-----|-------|-------|-------|----------|----------|
| Cattle        | ... | ... | ... | 610   | 600   | 642   | 42       | —        |
| Water Buffalo | ... | ... | ... | 16    | 27    | 37    | 10       | —        |
| Horsekind     | ... | ... | ... | 78    | 104   | 97    | —        | 7        |
| Pigs          | ... | ... | ... | 342   | 213   | 259   | 46       | —        |
| Goats         | ... | ... | ... | 150   | 158   | 147   | —        | 11       |
| Sheep         | ... | ... | ... | 112   | 100   | 66    | —        | 34       |
| Poultry       | ... | ... | ... | 2,544 | 1,570 | 1,123 | —        | 447      |

Table XXII—Milk yield—St. Joseph Farm, 1952-1957

| Year |     |     |     | Daily Average<br>number cows<br>milked | Total yield in<br>gallons | Daily average<br>yield per cow<br>in pounds |
|------|-----|-----|-----|----------------------------------------|---------------------------|---------------------------------------------|
| 1952 | ... | ... | ... | 60                                     | 55,336                    | 28                                          |
| 1953 | ... | ... | ... | 66                                     | 57,463                    | 24                                          |
| 1954 | ... | ... | ... | 72                                     | 59,884                    | 23                                          |
| 1955 | ... | ... | ... | 69                                     | 55,321                    | 22                                          |
| 1956 | ... | ... | ... | 64                                     | 53,532                    | 23                                          |
| 1957 | ... | ... | ... | 76                                     | 64,432                    | 23                                          |

Table XXIII—Horsekind strengths on the two Stock Farms—1956-1957

| Class of Animal      |     |     |     |     |     | 1956 | 1957 |
|----------------------|-----|-----|-----|-----|-----|------|------|
| Stallion—Light Draft | ... | ... | ... | ... | ... | 2    | 1    |
| Mares                | ... | ... | ... | ... | ... | 23   | 17   |
| Colts                | ... | ... | ... | ... | ... | —    | 1    |
| Fillies              | ... | ... | ... | ... | ... | 4    | 4    |
| Geldings             | ... | ... | ... | ... | ... | 3    | 1    |
| Mules                | ... | ... | ... | ... | ... | 20   | 22   |
| Jacks                | ... | ... | ... | ... | ... | 26   | 23   |
| Janets               | ... | ... | ... | ... | ... | 26   | 24   |

Table XXIV—Pig strengths on the two Stock Farms, 1956-1957

| Breed       |     |     |     | Boars |      | Sows |      | Young Stock |      | Total |      |
|-------------|-----|-----|-----|-------|------|------|------|-------------|------|-------|------|
|             |     |     |     | 1956  | 1957 | 1956 | 1957 | 1956        | 1957 | 1956  | 1957 |
| Large Black | ... | ... | ... | 16    | 18   | 37   | 37   | 83          | 142  | 136   | 197  |
| Berkshire   | ... | ... | ... | 25    | 22   | 11   | 12   | 41          | 28   | 77    | 62   |
| TOTAL       | ... | ... | ... | 41    | 40   | 48   | 49   | 124         | 170  | 213   | 259  |

**Table XXV—Goat strengths on the two Stock Farms, 1956-1957**

| Breed                 | Bucks |      | Does |      | Total |      |
|-----------------------|-------|------|------|------|-------|------|
|                       | 1956  | 1957 | 1956 | 1957 | 1956  | 1957 |
| British Alpine ... .. | 35    | 36   | 26   | 23   | 61    | 59   |
| Anglo-Nubian ... ..   | 25    | 25   | 7    | 9    | 32    | 34   |
| Grade ... ..          | 17    | 10   | 46   | 45   | 63    | 55   |
| TOTAL ... ..          | 77    | 71   | 79   | 77   | 156   | 148  |

**Table XXVI—Poultry strengths on the two Stock Farms, 1956-1957**

| Breed                    | Cocks |      | Hens |      | Chicks |      | Drakes |      | Ducks |      | Ducklings |      |
|--------------------------|-------|------|------|------|--------|------|--------|------|-------|------|-----------|------|
|                          | 1956  | 1957 | 1956 | 1957 | 1956   | 1957 | 1956   | 1957 | 1956  | 1957 | 1956      | 1957 |
| Rhode Island Red ...     | 37    | 52   | 423  | 403  | 606    | 16   | —      | —    | —     | —    | —         | —    |
| White Leghorn ...        | 17    | 22   | 53   | 120  | 58     | 153  | —      | —    | —     | —    | —         | —    |
| White Rock ...           | 17    | 11   | 134  | 66   | 157    | 76   | —      | —    | —     | —    | —         | —    |
| Barred Plymouth Rock ... | —     | 15   | —    | 58   | —      | —    | —      | —    | —     | —    | —         | —    |
| Cornish ...              | —     | 19   | —    | —    | —      | 28   | —      | —    | —     | —    | —         | —    |
| Muscovy ...              | —     | —    | —    | —    | —      | —    | 17     | 7    | 42    | 48   | 9         | 24   |
| TOTAL ...                | 71    | 119  | 610  | 647  | 821    | 273  | 17     | 7    | 42    | 48   | 9         | 24   |

**Table XXVII—Revenue Figures, 1957**

| Division                          |     |     |     |     |     |     |     | Amount       |    |
|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|--------------|----|
|                                   |     |     |     |     |     |     |     | \$           | c. |
| St. Augustine Station ... ..      | ... | ... | ... | ... | ... | ... | ... | 72,850       | 00 |
| Botanic Station, Tobago ... ..    | ... | ... | ... | ... | ... | ... | ... | 3,042        | 00 |
| Central Experiment Station ... .. | ... | ... | ... | ... | ... | ... | ... | 90,212       | 49 |
| Extension Division ... ..         | ... | ... | ... | ... | ... | ... | ... | 48,880       | 86 |
| Marper ... ..                     | ... | ... | ... | ... | ... | ... | ... | 5,055        | 31 |
| Apiaries ... ..                   | ... | ... | ... | ... | ... | ... | ... | 829          | 81 |
| St. Joseph Farm ... ..            | ... | ... | ... | ... | ... | ... | ... | 135,882      | 53 |
| Tobago Farm ... ..                | ... | ... | ... | ... | ... | ... | ... | 32,639       | 59 |
| Land Settlement ... ..            | ... | ... | ... | ... | ... | ... | ... | 16,317       | 94 |
| Rice ... ..                       | ... | ... | ... | ... | ... | ... | ... | 12,751       | 55 |
|                                   |     |     |     |     |     |     |     | \$418,462 08 |    |

## WEIGHTS AND MEASURES

|            |   |                   |
|------------|---|-------------------|
| 4 drams    | = | 1 ounce (oz.)     |
| 16 ounces  | = | 1 pound (lb.)     |
| 28 pounds  | = | 1 quarter (qr.)   |
| 4 quarters | = | 1 cwt. (112 lb.)  |
| 20 cwt.    | = | 1 ton (2,240 lb.) |

---

|          |   |                     |
|----------|---|---------------------|
| 2 pints  | = | 1 quart             |
| 4 quarts | = | 1 gallon (Imperial) |

---

### (1) Cacao :

|          |   |                     |
|----------|---|---------------------|
| 1 fanega | = | 110 lb.             |
| 1 bag    | = | 200 lb. (dry cocoa) |

### (2) Rice :

|                                                                                                     |   |         |
|-----------------------------------------------------------------------------------------------------|---|---------|
| 1 barrel paddy                                                                                      | = | 160 lb. |
| (as milled locally at present, without<br>parboiling, provides approximately<br>100 lb. clean rice) |   |         |

### (3) Citrus :

|                                              |        |                 |        |
|----------------------------------------------|--------|-----------------|--------|
| Average Weight—Standard Field Crate          | ...    | ...Grapefruit   | 80 lb. |
|                                              |        | Oranges         | 100 „  |
| Average Fruit—Standard Field Crate           | ...    | ...Grapefruit   | 80 „   |
|                                              |        | Oranges         | 200 „  |
| Average Weight—Shipping Crate                | ... .. | ...Grapefruit   | 80 „   |
|                                              |        | Oranges         | 90 „   |
| Average Fruit—Shipping Crate                 | ... .. | ...Grapefruit   | 80 „   |
|                                              |        | Oranges         | 200 „  |
| Weight Canned Juice—Case of 24 x 20 oz. cans |        | ...38 lb. gross |        |
| Weight of Fruit—Per case of Fruit            | ... .. | ...Grapefruit   | 72 „   |
|                                              |        | Oranges         | 80 „   |
| Average Weight of Standard Field Crate       | ...    | ...80 lb.       |        |

### (4) Limes :

|          |   |         |
|----------|---|---------|
| 1 barrel | = | 100 lb. |
|----------|---|---------|









